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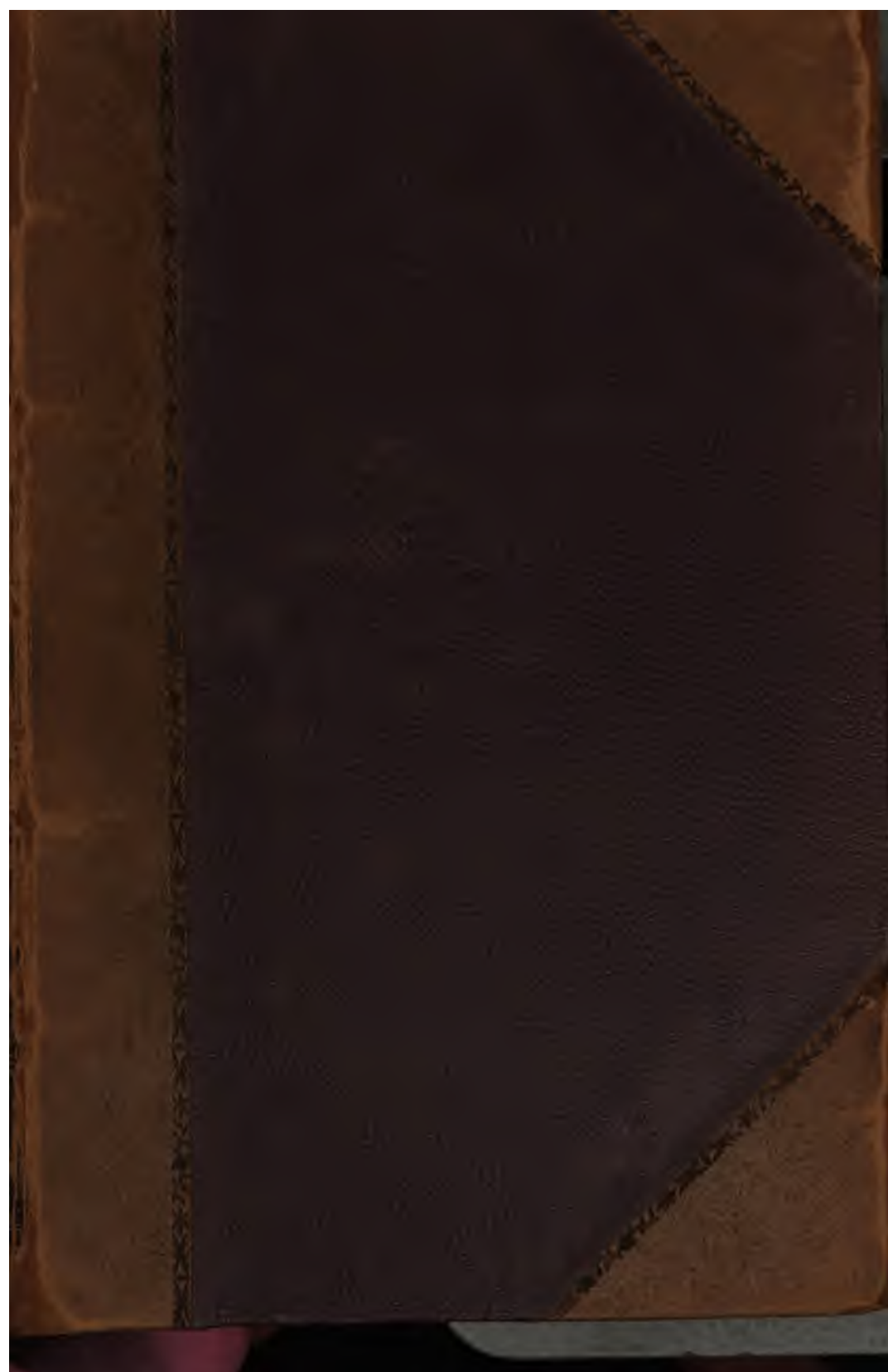
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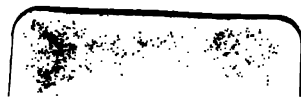
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THE PRACTITIONER:

A JOURNAL

OF

THERAPEUTICS AND PUBLIC HEALTH.

EDITED BY

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THE PRACTITIONER.

JANUARY, 1873.

Original Communications.

ABSTRACT OF RESEARCHES ON THE ACTION OF HYOSCYAMIA.¹

BY DR. OULMONT,

Physician to the Hôtel Dieu, Paris.

HYOSCYAMUS is a medicine known since early times: Dioscorides and Celsus mention it; and there is scarcely a disease against which it has not been employed, from neuralgias and catarrhs to hæmorrhages and epilepsy. Modern science has abolished a great number of these functions, and hyoscyamus is now hardly ever used excepting in painful affections and some neuroses.

Although singularly retrenched, the therapeutic applications of hyoscyamus have appeared to me worthy of a fresh investigation. I have therefore newly studied this drug, and sought to fix its indications; and although I have been compelled to dispute its usefulness in a great number of cases, I have obtained results, in a certain number of neuroses, sufficiently fortunate to deserve attention. I have not employed hyoscyamus

¹ On account of the great importance of these researches, I have thought them worthy to occupy part of the space usually given to original communications.—*Ed. Pract.*

itself, for I found that its action was untrustworthy. The effects vary, not only according to the doses employed, but even with equal doses, according to the mode of preparation, the part of the plant used, and even the season of gathering, the mode of drying, &c. Sometimes with very feeble doses I got symptoms of poisoning; on other occasions large doses gave no result. In order, therefore, to give my researches the desirable precision, I employed the alkaloid of hyoscyamus, which represents all its active principles, and which, being quite uniform in composition, will enable us to come to definite conclusions.

Hyoscyamia was discovered in 1820 by Brandes, and carefully studied in 1868 by Clin. Geiger and Hesse, in 1833, gave a rather complex formula of preparation by which they had obtained it in stellate groups of silky needles. When quite dry it has no smell; but when moist, especially if pure, it has a disagreeable odour something like that of tobacco. The commercial hyoscyamia known as Merck's is a brownish syrupy liquid. It has always been administered to patients either in pills containing $\frac{1}{4}$ grain (one milligramme), or in hypodermic injections of aqueous solutions varying from 1 to 4 per cent. strength.

Before experimenting on patients it was important to study the action of the drugs on animals; and, after having established the analogy of its effects with those of hyoscyamus, to determine the doses at which it becomes poisonous, and to thoroughly fix the limit which the physician ought not to exceed. I therefore made a series of physiological experiments, which I published two years ago. I need not repeat them here, but they completely established these two points:—

1. Hyoscyamia has a manifest action on the circulation; in small doses it diminishes it, in large doses it paralyses it. All the general phenomena are due to modifications of the capillary circulation, and disappear rapidly, the drug being eliminated very quickly.

2. Hyoscyamia has no action on the nervous system of the life of relation; the sensibility is not modified; nevertheless it is weakened by very large doses.

I particularly insist on this last point; that hyoscyamia does not directly act on sensibility. In an animal which has

taken large doses, neither the mixed nor the sensitive nerves, the posterior roots in the cord, nor the posterior columns, can be irritated without extreme pain. Only poisonous doses can so far weaken sensibility, that one can prick the muzzle of a dog without giving it pain.

This experimental fact seems to contradict clinic observation, which proves the happy effect of hyoscyamia upon pain, particularly neuralgia. I have often verified this narcotic action; and it is from this point that my therapeutic researches on hyoscyamia commenced.

NEURALGIAS.—I administered the drug to eleven patients with neuralgia in different places. Some cases were of a rheumatic nature, others were caused by syphilis, and a few by an undefined cachectic state. Of these eleven patients, three took pills, each containing $\frac{1}{8}$ grain of hyoscyamia; the others had hypodermic injections of a solution of 1 in 50. The doses commenced at $\frac{1}{32}$ grain, gradually increased to four or five times this amount daily. The injections acted better than the pills.

At the beginning of the treatment, after the absorption of from $\frac{1}{16}$ to $\frac{1}{10}$ grain, slight symptoms of poisoning appeared; viz. a very disagreeable dryness of the throat, nausea, and an enfeeblement of vision. Later, there was difficulty of swallowing, and dry tongue. There were sometimes agitation, delirium, fantastic visions, extremely dilated pupils, &c.; but these symptoms occurred more rapidly with the hypodermic injections. At the first experiment, after the injection of $\frac{1}{32}$ grain, the symptoms seemed much more intense than when the drug had been given in pills. As these phenomena are quite temporary, and the drug is rapidly eliminated, we pursued the same plan daily, and only stopped when the poisoning became too decided. In this way we cured two occipital neuralgias in three and five days, and three neuralgias of the face and neck in four days. An intercostal neuralgia was improved by the fourth and cured by the sixth day. Of five cases of sciatica, one was cured on the eleventh day, another on the fifteenth; one lasted two months, and another two months and a half; one was not improved.

Certainly these are remarkable results; still, they are not more marked nor rapid than those we usually get with opium and belladonna. The latter have even a certainty of action

which hyoscyamia does not equal, and are therefore usually to be preferred to it. In fact, hyoscyamia might be excluded, without inconvenience, from our list of anti-neuralgic remedies.

TREMORS.—The case is very different as to the use of hyoscyamia for the nervous and convulsive diseases of obscure seat and nature which are included under the word “tremor”; I have obtained improvement, and even cure, in cases where every other remedy had proved ineffective. And as we are speaking of grave maladies and troubles which sometimes make the lives of patients a burthen, I think it useful to impart the results which I have obtained. I was led to employ hyoscyamia in tremors by a curiously experimental fact. If one injects an animal (dog, rabbit, or cat) with even a weak dose of hyoscyamia, independently of the symptoms in the nervous membranes and the nervous system, one observes that the animal gradually loses the power of moving its hind-quarters. If one lifts it up, it cannot stand without leaning against something; after a few moments it sinks down on its posteriors, which it seems to forget. If pushed, the animal can make a few steps; it runs painfully dragging its hind-quarters, and then the movements become ataxic and it falls again. This weakening of the hind-quarters is very marked in the cat, and is especially obvious when the animal tries to jump. This semi-paralytic state lasts a variable time, a few minutes to an hour, then disappears. It is not peculiar to poisoning with hyoscyamia: it is observed in poisoning by some other alkaloids; but it seems much more marked with hyoscyamia, and M. Vulpian, who has a great knowledge of experiments on animals, had himself been struck with the character of this semi-paralysis. Orfila had also given this symptom as one of the effects of poisoning with hyoscyamia. This special action on the nervous system, which appears to me due to slackening of the capillary circulation in the cerebral spinal centre (a slackening which, in our experiments on animals, we have seen follow the administration of hyoscyamia even in weak doses), had given me the idea of employing hyoscyamia in cases of tremor. I was confirmed in my ideas by the good results obtained by M. Charcot, who experimented without knowing of my researches. This learned physician treated at the Salpêtrière many patients with paralysis agitans with hyoscyamia in doses

of $\frac{1}{32}$ to $\frac{1}{16}$ grain daily, and obtained an improvement which he had vainly sought for by all known remedies.

Besides this, I knew that men poisoned with hyoscyamus had had, among other symptoms, the same phenomenon of semi-paralysis of the lower limbs. Our venerated master, M. Jolly, has published a remarkable example of this; but it was interesting to know if hyoscyamia produced the same effect. Chance gave me the opportunity of settling this question by bringing to my notice a case of poisoning with hyoscyamia observed by a physician in his own person.

Obs. 1.—To calm the spasmodic contractions of the neck of the bladder caused by a stone impacted into the orifice of the urethra, Dr. B. injected under the skin of his right thigh $\frac{1}{32}$ grain of a solution of hyoscyamia in distilled water. In three minutes there were vague disquiet and malaise, a little giddiness and shivering. The malaise soon increased; torpor came on, with hebetude and a desire for repose; the pupils were very dilated. The torpor was soon succeeded by general excitement; the patient tossed about, and could not stay quiet; the throat and mouth were dry; the tongue was embarrassed; the speech difficult. There were tremor and incoherence of movement. Later on there were alternations of excitement, and relaxation more or less prolonged, during which there were sometimes disorderly movements, and sometimes the limbs seemed paralysed the flexors no longer contracted, and the patient could not grasp objects. A constant symptom was paralysis of the lower limbs; the patient could not stand upright, and unless held up he would fall like an inert mass. There was dysuria; the patient passed a few drops of urine with difficulty. From time to time the patient was taken with profound drowsiness, which was always succeeded by some excitement. Doctors Fernet and Masson, who were summoned, administered coffee and hypodermic injections of morphia. Swallowing was very difficult, but the muscular excitement rapidly diminished. An agitated sleep soon came on with talkativeness; during this the patient was rather noisily delirious. About four hours after the poisoning, delirium ceased and sleep became calm; eight hours later the patient awoke in his usual state, saving a little general fatigue and weakness of vision, although the pupils had rapidly

resumed their natural state. At the end of twelve hours all disorder had disappeared: the breathing and circulation had never been disturbed at any period.

It would seem from this case as if hyoscyamia approximated to the character of the muscular poisons. But the rapidity with which the symptoms disappear, the alternations of excitement and semi-paralysis, oppose this view. I think it more rational, and more accordant with my experiments on animals, to attribute the symptoms to diminution and weakening of the capillary circulation in the nervous centres, and especially in the spinal cord. This view guided me in my researches. Without troubling myself as to the cause of the tremors, whether exciting or paralyzing, or whether, as M. Marey seems to think, they must be considered simply as disturbances of muscular contractions, I thought that the indication was to try to diminish the congestion of the nervous centres, and especially of the spinal cord; and it seemed to me that hyoscyamia, from its physiological properties, was the appropriate remedy.

The results justified my expectations. I have employed hyoscyamia to combat the muscular disturbance and the nervous phenomena in mercurial tremor, senile tremor, paralysis agitans, locomotor ataxy, and finally in tetanus.

Obs. 2.—The first patient treated was a man, aged 45, with mercurial tremors of six years' standing. Every variety of ordinary treatment had been tried, but he only got worse. Besides extreme tremor of the hand, there were continuous occipital pain, failure of memory, and weakening of reason. The legs were very weak, the speech hesitating and interrupted. I gave sulphur baths, afterwards joined with large doses of bromide of potassium, without any benefit. Opium with alkaline baths equally failed. After two months' useless treatment, I gave hyoscyamia, $\frac{1}{16}$ grain daily: the day after this was begun, the slighter symptoms of poisoning appeared; the drug was nevertheless pushed till about $\frac{1}{4}$ grain was taken daily. From the fifth day of treatment there was notable improvement; the remedy was better tolerated, while the symptoms of the disease diminished. The doses were lowered by about one-half, and thus continued for nearly a month: it was found for some time impossible to leave off the medicine without a relapse, but

a final cure was obtained after two months and a half of treatment with hyoscyamia.

Obs. 3.—The next patient was a felt-cloth maker, aged 53, who had suffered for three years; at first with weakness of the lower limbs, then with heavy and continuous headache, hallucinations and nightmare, and soon with continuous trembling of the hands, which extended afterwards to the whole body. Besides the trembling, headache, and great general cachexy, he had deafness and loss of memory. In this case, hyoscyamia, as before, was given, at first in doses of $\frac{1}{4}$ grain daily. Toxic symptoms began on the third day; by the ninth there was sensible improvement. On the fourteenth day the patient was attacked with mild small-pox, but the remedy was steadily pushed on until a maximum of $\frac{1}{4}$ grain daily was reached. The cure was slow in this case, but seems to have been finally complete.

I have treated six patients suffering from mercurial tremor with hyoscyamia. Of these, four were cured, and two only improved; in three of these the disease had lasted from three to five years; except two, all had previously undergone varied treatment, but especially the use of sulphur baths, opium, and bromide of potassium. In those who had been treated thus, the good effects of hyoscyamia were more quickly apparent than in those who had not been treated previously.

SENILE TREMOR.—Encouraged by the happy results which I had obtained in mercurial tremor, I resolved to try the use of hyoscyamia in one of the most painful and obstinate of the neuroses, viz. senile tremor. Owing to the various causes connected ordinarily with advancing age, this disease is one of those which most completely elude the power of the physician. If, therefore, I have not obtained such happy results as in mercurial tremor, the improvement which took place in two cases marks nevertheless a real progress in the treatment of the disease. The two patients were aged respectively 57 and 64 years. The trembling had lasted very long; two years in one, three months in the other: it affected the upper limbs and the head, and the legs to a lesser degree. There was some hesitation of speech; there were also occasional violent neuralgic pains in the legs. In the youngest and most recently affected patient, the treat-

ment with hyoscyamia produced great amelioration within one month; in the other and more inveterate case almost equal improvement resulted, but after a much longer period of treatment: very moderate doses, however, were employed.

PARALYSIS AGITANS.—On this subject I can only quote the results obtained by M. Charcot, and reported in the thesis of M. Ordenstein:¹—"For some time past M. Charcot has prescribed hyoscyamia for patients suffering with paralysis agitans who have not obtained benefit by any treatment. The dose has been about $\frac{1}{32}$ or $\frac{1}{16}$ grain daily. This medicine has procured some hours of repose for many patients." I know that M. Charcot, who has been obliged by circumstances to suspend these experiments, intends to resume them.

LOCOMOTOR ATAXY.—One could hardly hope to obtain good results from the use of hyoscyamia in this grave disease; nevertheless I have employed it in two cases, and in certain respects obtained improvement. One of these patients was a man aged 35, in whom the ordinary symptoms of the disease were complicated with attacks of colic and vomiting; these complications were not affected by the treatment. Two satisfactory results, however, were obtained in this case: great improvement in walking power, and diminution in the pains in the limbs. In the second patient, a man aged 27, and in whom the disease was thoroughly confirmed, the convulsive shocks disappeared, the trembling ceased, as did also the violent pains in the limbs; the walking power also improved. The amelioration has been maintained by continuance of hyoscyamia. It is probable that the remedy acted in these two cases merely as a narcotic, just as it acts in neuralgia. *In neither instance was the fatal progress of the disease arrested.*

TETANUS.—An English physician, James Begbie, had already successfully employed daturia (which is very analogous to hyoscyamia) successfully in a case of tetanus. This encouraged me to try hyoscyamia.

Obs. 4.—A young man, aged 25, suffered a contused wound of the wrist, which was dressed with sutures and plaster. Eight days afterwards he caught cold from sleeping with the window open; next day the wound became painful, and he suffered

from malaise and oppression. That evening he noticed some stiffness of the jaw; this increased in the night, and he entered the hospital the next day. In the course of the same day the symptoms were fully developed, and the treatment with hyoscyamia was commenced, at first by pills, afterwards by hypodermic injection on account of the difficulty in swallowing. The malady ran a moderately violent course, and ended fatally four days from the development of tetanic symptoms. The patient had taken on the average $\frac{1}{2}$ grain of hyoscyamia daily. It is certain that this treatment appeared to relieve the pains; from the second day they were infinitely less violent and painful than before. The muscular spasms do not appear to have been affected; nevertheless it is probable that life was somewhat prolonged by the remedy. It is a remarkable fact that only very slight symptoms of poisoning were produced; and it may be right in future very cautiously to adopt the use of larger quantities (20 to 50 per cent. larger); the hypodermic method should be exclusively employed.

I believe I may sum up my research in the following propositions:—

I. Hyoscyamia represents all the active principles of hyoscyamus. The fixity of its composition gives to the results which we obtain from its use a precision which hyoscyamus in substance does not yield in the same degree.

II. Hyoscyamia should be given at first in weak doses ($\frac{1}{32}$ grain daily), either in pills or by hypodermic injection. We may gradually increase the dose to five or six times this quantity.

III. The remedy must be continued even if there are slight symptoms of poisoning, such as dryness of the throat and dilated pupils. But if the symptoms become grave, we must suspend it. These symptoms are temporary, and disappear in a few hours.

IV. Hyoscyamia exerts a narcotic action on man. It is efficacious against pain, and particularly against neuralgia; but its power is less than that of opium and of belladonna.

V. Hyoscyamia exerts a favourable action in spasmodic and convulsive neuroses. It cures mercurial trembling in cases where every other remedy had failed. It has produced a notable improvement in senile tremor and paralysis agitans.

VI. Its action in locomotor ataxy is null.

VII. In traumatic tetanus, although the patient died, this remedy produced a sufficiently notable remission of the symptoms to leave the question of its power still open and to call for new experimentation.

[Translated and much condensed from the *Bulletin de Thérapeutique*, Dec. 15.]

SOME RESEARCHES ON INFANT DIGESTION.

BY PROSPERO SONSINO, M.D., PISA,

Editor of the Medical Newspaper, the "Imparziale," of Florence.

IN an article published in the *Practitioner* of last September, I gave an account of some physiological researches, which, with other arguments, brought me to establish the existence of a physiological or normal dyspepsia to starchy food in the first portion of infant life. Since I have published that article, I thought convenient to institute another series of researches, in order to bring forward not merely more evidence of the existence of that dyspepsia, but to establish also, if possible, the limit of age in which it ceases. This new series of researches was directed to the examination of the motions of infants that were fed with starchy aliments, with the object of recognising if they contain unaltered starch. It is clear that by finding starch in the motions, we can infer that it did not find conditions for being well digested. The tests used for discovering starch were iodine, which gives a characteristic blue colour with starch, and the microscope, by which we discover the granules peculiar to the same matter.

The researches of which I speak were made, at my suggestion, at the East London Hospital for Sick Children, which I have frequented during my stay in England; and I am indebted for their execution to the courtesy of Dr. Magrath, resident medical officer in that hospital. Though few in number, I wish to publish them, to invite our *confrères* to repeat them, and illustrate more the subject which, in my opinion, is of paramount importance in the hygiene of infancy.

I will begin by giving the result of one case tried at Basel, where I passed some days during last September; and then I will give

an account of the others in the order in which the experiments were made by Dr. Magrath.

CASE I.—Infant, aged three months; came into the *Kinder Spital* of Basel in very bad condition with atrophy for want of convenient food. It was fed then with Nestle's Powder, a milky compound, which, analysed by Dr. Riescher, of the Basel University,¹ was found to contain only a little quantity of starchy matter, being principally composed of nitrogenous matter and sugar. This Nestle's Powder, being conveniently boiled, is much used now in Switzerland for infant feeding. The motions of the little infant, tested by Mr. Oeri, the house surgeon, with iodine, gave the characteristic blue colour, and the presence of starch was confirmed also by the microscope. This is the only case I had the opportunity of trying in Basel.

CASE II.—Sarah Grey, aged sixteen months, received as in-patient in East London Hospital for Children, being affected with enlargement of glands of the neck, and advanced atrophy, with diarrhoea. She took for some days in her food some of a compound called *lactose*, prepared by Messrs. Darby and Gosden, Chemists, 140, Leadenhall Street, containing a certain amount of starchy matter. The motions of this child, notwithstanding that she was affected with diarrhoea, did not manifest presence of starch with iodine, and thus we must conclude that she was capable of digesting starch.

CASE III.—Arthur Read, aged five months, healthy, received as in-patient in the hospital, only for club-foot. It suckles from the mother, but after giving it for two days some *lactose*, in the subsequent motions we find manifested the presence of starch by a strong blue colour obtained with iodine.

CASE IV.—Martha Jessop, aged fifteen months, fed with milk and beef-tea, to which was added some *lactose*. The examination of the motions does not give sign of presence of starch after the use of the *lactose*, and then we inferred starchy matter was digested.

CASE V.—E. Collonson, aged five years, convalescent from pneumonia; used starchy food. His motions show to the test of

¹ The analysis of this food is given in *Correspondenz Blatt für Schweizer Aerzte* of September 1872, p. 366.

iodine presence of starch; but the blue colour was not so intense as to give evidence of large amount of starch.

CASE VI.—John Crutchfield, three years old, suffering from empyema and rickets; fed with milk and starchy articles. Its motions offered strong evidence of the presence of starch.

CASE VII.—Emily Murdoch, aged twelve months; takes milk and corn-flour. The motions do not give any blue colour with iodine. Therefore we infer that starch was digested.

CASE VIII.—Elizabeth Brown, aged three months; takes mother's milk, and twice a day some bread with animal milk. The motions give strong evidence of the presence of starch, which we recognised too with the aid of the microscope. Therefore it must be inferred that it is not digested, or only partially so.

CASE IX.—W. G. Dorrill, aged four and a half months, its food being of corn-flour, groats, and milk; child was not reared from the breast. The motions with iodine give the known blue colour, and the presence of starch was also recognised with the microscope in large quantities.

CASE X.—Eliza Emary, aged ten months, fed with beef-tea and yolk of eggs with milk, to which has been added one teaspoonful of arrowroot twice a day. The examination of the motions does not give distinct evidence of the presence of starch, but a few bluish spots appeared in test-tube with iodine, and we can infer that a very little starch was present.

The following table shows the results of the experiments above referred to:—

Age.	No. of Cases.	Result.
3 to 5 months. . . .	4	Starch in motions.
10 months.	1	Starch in motions not quite clear.
12 to 16 months . . .	3	No starch in motions.
3 years	1	Starch in large quantity.
5 years	1	Starch in small quantity.

I do not draw any new conclusion from these researches, as it seems to me that they are too few, but they will afford subject matter for future investigation.

TRANSFUSION OF MILK IN CHOLERA.

BY EDWARD M. HODDER, M.D.,

Toronto, Canada.

(Extract from a letter to the Editor.)

PREVIOUSLY to the last advent of cholera, twelve or fourteen years ago, I suggested to my friend and colleague, Dr. James Bovell, the propriety and probable success of transfusion of blood. He at once met me with the objection, that the supply would most likely fail, inasmuch as few persons would like to part with their blood during an epidemic of the kind, and if they did we could not be sure that the blood itself was not diseased. This appeared to knock my scheme on the head at once, but I began to reflect, and to ask myself, What is the nearest analogue of the blood? and milk came to my mind. The next question to be decided was, whether milk had ever been injected into the veins of man or animals, and what was the result? I found that Donné had injected it into the veins of dogs, rabbits, and birds, and that it did not kill them, but, on the contrary, he, with Wagner, Gulliver, and others, were of the opinion that the white corpuscles of the milk were capable of being transformed into red blood-corpuscles.

I then decided on the transfusion of milk into the human veins, should cholera pay us another visit.

At length the true Asiatic disease made its appearance, and found the City Fathers as unprepared for it as if such a disease had never existed. Dr. Bovell and myself volunteered our services, and an old shed on the hospital grounds (used as a small-pox ward) was made the temporary cholera hospital. The first two or three cases were moribund when brought in;

but the next day, about noon (the hour at which the medical officers of the hospital made their rounds), a stout-built farmer, who had come to Toronto on business, was admitted. He was in a state of collapse, cold, pulseless, blue, and shrivelled; the secretion of the urine was arrested; there were vomiting and purging of rice-water fluid;—in fact, he seemed dying.

I immediately got everything ready, and then sent a message requesting consultation with any of the medical officers who might be in the hospital, when four gentlemen came, and I asked them the following questions :—"Do you consider this a genuine case of epidemic Asiatic cholera?"—"Certainly, and a very marked one." "Do you think anything can be done to save him?"—"Nothing; he is dying." "Would any medical treatment be likely to be of any use?"—"None." "Then he must die."—"Yes." "Then, gentlemen," I said, "I am about to try the experiment of transfusing milk into his veins."—"If you do, you will kill him," was the reply. Thereupon I invited them to be present at the operation, but three out of the four left the building; the fourth remained, but would not assist. Everything being ready, I ordered a cow to be driven up to the shed; and, while she was being milked into a bowl (the temperature of which was raised to about 100° Fahr.) through gauze, I opened a vein in the arm and inserted a tube, and then filled my syringe (also previously warmed) and injected slowly therewith. No perceptible change, either for better or for worse, took place; so, after waiting two or three minutes, I again filled the syringe, and injected seven ounces more. The effect was magical: in a few moments the patient expressed himself as feeling better; the vomiting and purging ceased, the pulse returned at the wrist, the surface of the body became warm;—in fact, the man rallied, and speedily recovered without a bad symptom.

The next day a woman, an habitual drunkard, was admitted in the same condition as the above described man. I transfused fourteen ounces of milk in a similar manner, and in a few minutes the vomiting and other symptoms ceased, and she improved; but towards evening collapse came on, when I injected fourteen ounces more milk, and she also recovered, but after secondary fever.

The third case was admitted almost *in articulo mortis*, but he

rallied for a time, then collapsed, as the woman did, and died during my absence from the shed. Had I been present I should have injected more milk into his circulation, and he might have rallied again.

Dr. Bovell and myself then applied to the Corporation for a good cow, and a few articles indispensably necessary for the comfort and well-being of the patients; these were refused, and we thereupon sent in our resignations.

[It is to be regretted that this most interesting experiment came to such an untimely end, and we join in the wish with which Dr. Hodder concludes his letter, that it may be repeated here on a large scale should cholera ever visit England again. We scarcely know whether it is necessary to add, even for the information of English readers, that Dr. Hodder is a very distinguished and experienced practitioner, so that his evidence is most valuable and trustworthy. We would suggest, however, that it would probably not be necessary to take the milk direct from the cow; artificial warming would surely answer the purpose?—ED. *Pract.*]

ON THE DIAGNOSIS OF PERIOSTITIS IN THE ORBIT.

BY W. SPENCER WATSON, F.R.C.S.

It is often a matter of some difficulty to say *what structures* within the orbit are affected, and *how* they are affected, when a certain amount of displacement of the eyeball or distortion of the features indicates *some* intraorbital derangement. And in scarcely any disease in this cavity is the difficulty of diagnosis more striking than in the various forms of periostitis. It is nevertheless often a matter of extreme importance to make an accurate diagnosis in such cases, and a comparison of some of the cases lately under treatment will possibly be of use in elucidating this difficult subject.

CASE I.—S. M., a delicate, fair-haired girl, aged 16 years, came to the South London Ophthalmic Hospital in March 1870, with swelling of the right superciliary and temporal regions, which had commenced ten days before.

The right upper eyelid is puffy and slightly discoloured, of a dusky red colour. There is great fulness of the right temporal region and brow, and loss of the vertical wrinkles on the right side when the corrugator supercilii is thrown into action. The margin of the orbit is extremely tender and very painful. She has had no pains in any other parts of the osseous system, and no traces of syphilis. She has had bleeding from the nose the last two or three days, and has recently had sore throat. She has been living badly for some time past.

The eyeball is not displaced. Ordered to take potass. iodid. gr. viij. ter die, and a grain of opium at bed-time. Cotton-wool to be applied to the temple. This treatment had a rapidly

beneficial effect, and was followed by a course of cod-liver oil and iodide of iron. The patient had a relapse about a month afterwards, but again improved rapidly under the iodide of potassium treatment.

In this case we may assume that some cachectic form of periostitis was at work, and that it affected only the anterior parts of the orbital walls. The case is no doubt open to the suspicion of a syphilitic taint, but no other traces in the system could be discovered, and in this respect it offers a contrast to most cases of undoubted syphilitic periostitis.

I have, in several other cases of periostitis in this region, observed a fulness in the temporal region associated with the puffiness of the eyelids. In one of these cases there appeared subsequently a collection of pus under the temporal fascia, and, in another, pus formed under fascia covering the zygoma.

The case of a patient at present under my care, the symptoms of which are still very obscure, will, I believe, be in the end found to be of a similar kind to those just referred to, viz. cachectic periostitis, distinct from syphilitic periostitis on the one hand, and from strumous periostitis on the other.

CASE II.—This patient is a boy, aged 16, whose aspect is in all respects healthy, with the exception of a displacement of the right eyeball downwards, inwards, and slightly forwards. He first noticed an indistinctness of vision two or three days before coming to the hospital, and, when he first came, was suffering from diplopia in addition to his other discomforts.

The upper eyelid appeared at first sight to be affected by ptosis, but was, when more closely examined, not by any means paralysed, and the appearance of ptosis was produced by the increase of distance between the margin of the orbit and the edge of the eyelid on the side affected as compared with the sound side, and was in reality due to displacement of the eyeball downwards. When seen in front, this displacement was very apparent, and the different levels of the two eyes gave the boy a most remarkable and striking aspect. There was little or no pain, and very slight tenderness on the margins of the orbit, and no perceptible increase of heat; but the suddenness of the attack pointed to some acute mischief in the region of the lachrymal gland. Struma and syphilis were both out of the

question. A slight scar on the upper eyelid, near its outer extremity, at first sight pointed to some traumatic origin, but this scar was the result of an injury many years before, and the sudden diplopia had come on only a few days before he was seen. The only diagnosis possible is that of cachectic periostitis, for the treatment by iodide of potassium and by cod-liver oil and iodide of iron, though not at present quite successful, has made too much alteration for the better to make it possible that there can be any solid or other tumour or growth of a purely non-inflammatory kind.

It is, then, of great importance, in such cases as those above related, to support the system by good diet, and especially by cod-liver oil. They offer a contrast on the one hand to the strumous form of periostitis, in which there is decided and early formation of sub-periosteal curdy pus, and to that of syphilitic periostitis on the other, in which we generally find interstitial thickening of the bones themselves. The cachectic form of the disease is probably due to a thickening of the periosteum and the fibrous tissues in the neighbourhood, but without the tendency to the formation of pus on the one hand, or to the thickening of bone by nodal development on the other. It is probable (though at present pathological demonstration is wanting upon this point) that some enlargement of the bones is occasionally produced under such circumstances, of a nature analogous to that seen in rachitis, and that the periosteal swelling is only a part of the general swelling of the whole of the tissues in the neighbourhood of the affected bones.

Of true strumous periostitis the following case is a good instance:—

CASE III.—*Scrofulous Abscess in both Orbits, terminating in Meningitis, and Death.*—W. Burbidge, aged 10 years, first came under my notice in the latter part of the year 1866. He was a patient of my late colleague, Mr. Hulme, under whose care he had been for some years. The disease was attributed by his mother to a blow received three years before; but it is quite evident, from the scars about the face and elsewhere, that he is a very scrofulous boy, and that in all probability the disease in the orbit was of a scrofulous nature. The right eyeball is seen to be enormously protruded, the lids turned inside out, and there

are sinuses at various points round the margin of the orbit, from which a thin discharge constantly escapes.

When I first saw him, he suffered occasionally from pain of a severe kind, and had intermittent attacks of inflammation in the protruded parts, but no head symptoms had yet shown themselves.

About the end of March 1867 there was occasional delirium and screaming, and in May the left eye began to protrude, and very soon this eye was entirely destroyed. The right eye, though first affected, retained some little vision within a very short time of the patient's death, which occurred on August 5, 1869, the latter few weeks being passed in a state of semi-coma. I assisted Mr. Hulme in a post-mortem examination of the head, when we found there was a quantity of thick curdy yellow tubercle or inspissated pus lying between the dura mater and the sphenoid bone of the right side, and extending up to the squamous portion of the temporal bone on the same side across the sella tunica and into both orbits.

There were caries of the floor of the right orbit and an opening into the right antrum, which itself communicated with the mouth by another opening in the alveolar ridge. The antrum, therefore, on this side formed an abscess full of fœtid pus.

The membranes of the anterior and middle lobes of the brain showed slight traces of recent inflammation.

The state of the antrum and floor of the orbit was probably a late complication of the primary disease, and it was, of course, impossible to have guessed at the amount of mischief that was going on within the cranium until a very late period in the case.

The thick deposit of new bone seen upon the bones of the base of the skull shows clearly that inflammatory thickening had been going on in this region for a considerable time; but it by no means follows that this morbid process could have been stopped or averted by any surgical interference.

It is probably rare for scrofulous periostitis to run so disastrous a course as in the case just related; but in all affections of the orbit it is well to be prepared for serious cerebral complications, and the prognosis should be correspondingly cautious. Even when the inflammation is of a chronic kind, as in the

typical syphilitic forms of periostitis, there is a certain risk of the intellect becoming seriously impaired, if not of its utterly breaking down, as a sequel of periostitis of the orbit and extension of the disease to the meninges.

In the following instance it may be doubted whether the cerebral complications were due to this cause or to others.

CASE IV.—An artist of about 40 years of age, who had suffered from tertiary syphilis in various forms, after severe exposure to cold and wet, had a sudden swelling of both eyelids of the right eye, accompanied by pain and tenderness of the orbital cellular tissues, and excessive tenderness of the bony margins of the orbital cavity. The pain was intense and constant, and entirely prevented sleep. He was put upon large doses of iodide of potassium, and the region around the orbit was freely painted with strong iodine paint. The swelling rapidly subsided, but at intervals there were recurrences of pain and tenderness, and for a long time severe nocturnal pains in the region of the mastoid process and over the whole of the scalp continually worried him. He resorted to a variety of remedies, and among others to bromide of potassium, and blisters on the scalp and nape of the neck. During the summer of 1872, while away from town, he found that he at times lost consciousness, and was found by his friends wandering about without purpose and in an insane condition. He recovered, however, from this, and when last seen by me was free from pain and with unimpaired intellect, though in a dreadfully depressed and feeble condition.

It is possible that the severity of the treatment (which he directed himself, *without* medical guidance, for several months) may have had something to do with the serious complications in this case; but the first implication of the membranes of the skull could only be due to the syphilitic taint and the extension of the periostitis to them from the orbit.

A somewhat similar case has lately been under my care at the Royal South London Ophthalmic Hospital.

CASE V.—Anne M., aged 62 years, a widow, came to the hospital with proptosis and displacement of the eyeball (right) inwards and downwards, in February 1872, soon after the symptoms first manifested themselves. She had for many

years suffered from tibialgia, evidently of syphilitic origin, and her shinbones, elbows, frontal bones, and clavicles were very tender when pressed by the finger, and her face presented scars of tertiary ulcers in various parts. The displacement of the right eye caused diplopia, and her sight was also impaired from retinal causes. With either eye she could only distinguish letters of No. 16 of Jäger's test types, and the ophthalmoscope detected in the right eye retinal hyperæmia and pulsation of the retinal vessels. The optic disc in the left eye was slightly excavated. The tension of the right eye was somewhat increased, and she had occasional flashes of light in this eye. In order to see to the best advantage she covers up the left eye, which is *not* affected by proptosis, and uses her right eye, the sight of the latter being rather more distinct than that of the former.

Under a course of iodide of potassium the pains and tenderness have almost ceased, the proptosis has diminished, and the sight has considerably improved. Her intellect, probably never very perfect, is very confused, and she has a scared and dazed manner, as if her memory were very imperfect; but this manner has become less marked, and all her faculties more acute, as the general health has improved.

Nodal swellings of the margin of the orbit and a few of the cavity have been put on record. Those which affect the upper margin are the most common, and the gummy variety is seen here, and also very rarely on the lower margin. These cases would more properly be classed under the head of "periostoses," and may therefore scarcely be included in the subject of this paper; but there is an evident connection between those forms of syphilitic periostitis just alluded to and the cachectic periostitis, and it is not improbable, from the history of some cases of the latter, that an inherited syphilitic taint may give rise to fibroid nodal swellings in the periosteum. Until this connection, however, is established, it would be better to class them under the head of cachectic diseases.

Traumatic inflammation of the orbit generally attacks the cellular tissue more than the other contents of the orbit, but the periosteum may doubtless be affected at the same time, and it is more likely to be affected when the bones have been implicated in the injury. I was much impressed on one occasion

with the sudden effusion into the orbit which occurred in a case in which I had passed a style through the lachrymal sac and nasal duct. The patient had worn a small style for some time, but I had recently withdrawn the smaller style and replaced it by a larger one. The next few days were very severe, and this gentleman exposed himself rather imprudently to the influences of the weather. When he next came to me, he had slight proptosis and displacement outwards of the eyeball on the side corresponding to the style. His attention was first directed to this state of things by the diplopia and confused vision occasioned by the altered position of the eyeball.

This is the only case in which I have met with such a consequence, or concomitant symptom, associated with mucocoele and its treatment by the style. It is an accidental complication which must be due to extension of inflammatory exudation or thickening of the periosteal lining of the sac to that of the orbit.

The treatment of the various diseases above described will be conducted on general principles, and could hardly be treated of in this paper with any advantage. It may, however, be here suggested that many cases will henceforth be more easily diagnosed by the aid of the aspirator of Dieulafoy, and the treatment rendered more certain, though it will rarely be found necessary to resort to this instrument in ordinary cases of periostitis. Should it happen that there is a suspicion of pus having collected beneath the periosteum, the aspirator would be of essential service, and would decide the question of the effusion being of a solid or liquid nature, and of the position of the latter if it had formed; and it would also aid very materially in cases of suspected tumours, or collections of blood or serum, in which a puncture or incision was undesirable.

For instance, in very young children the uniform swelling that sometimes involves the eyelids and upper part of the cheek when some collection of pus (either in the lachrymal sac or in the neighbourhood) is forming, an exploratory puncture in the region of the sac would clear up the obscurity of the case.

The following case occurs to me illustrating this difficulty :—

CASE VI.—In May 1868, an infant of one year and eight months of age was brought to me at the Central London

Ophthalmic Hospital, with both left eyelids enormously swollen and slightly reddened. This had come on a few days before after a blow of some kind. The eyeball was not protruded, and was quite free from redness or congestion, and no circumscribed hardness could be felt in the eyelids. A cooling lotion was used and iodine applied to the brow, and the case was supposed to be one of traumatic periostitis of the orbit. In a few days, however, the mother again brought her child. The swelling had entirely left the eyelids, and there was now a fulness and slight redness of the skin between the bridge of the nose and inner canthus; and the mother stated that a sudden escape of pus and blood had come from the nostril, and the swelling of the eyelids soon after subsided.

Here, no doubt, was a case of temporary obstruction of the lachrymal sac and suppuration, the abscess discharging itself, contrary to the usual course, through the nostrils. The swelling of the eyelids was, of course, a mere extension of the inflammatory effusion consequent on the abscess in the sac or its neighbourhood.

Even in adults, in whom the bony walls of the orbit are much more prominent than in the child, it is sometimes difficult to distinguish the original cause of a swelling which seems to involve the eyelids and orbital tissues in one uniform enlargement, and even an abscess in the canine fossa of the upper jaw will sometimes induce sufficient swelling of the eyelids to cause temporary obscurity. The best method of distinguishing an abscess of the lachrymal sac from any intraorbital inflammation is to make gentle pressure over the region of the sac, and it will be found that if abscess is forming there, this part is more tender than any other; and on exploring in the neighbourhood with the finger, a circumscribed hardness is here felt which offers a great contrast to the soft puffy feeling of the eyelids and cheek. The same process will distinguish collections of pus in other adjacent parts, and especially in the case of abscess of the jaw near the canine or incisive fossæ.

ON MIGRAINE.

BY S. CLIFFORD ALLBUTT.

IN a recent number of the *Practitioner*, Dr. Anstie considers the nature and characters of migraine, not only with his usual insight and effectiveness, but, if I am not mistaken, with also some claim to originality. It is not quite clear from his words whether he rests this claim upon his observation of the essentially neuralgic nature of migraine, or whether it is to rest on his attribution of the fault to the fifth nerve in particular. That migraine is essentially a neuralgia, and not a mere incident in disorder of the stomach, has surely been upheld for many years. For my own part, fifteen years have certainly passed since I first found myself contesting the obstinate belief of the sufferers and their medical advisers, which asserted that the liver and stomach were the organs primarily and mainly at fault. Among a large number of persons this belief still holds its ground, while among others the neuralgic origin of the affection is recognised, though there may be differences of opinion in the matter of its seat. I remember that Mrs. Garrett-Anderson in her thesis for the doctorate of the Paris University sustains the hypothesis that migraine is a pain taking its rise in the central ganglia of the brain. Stokes, if I mistake not, regarded migraine decidedly as a trigeminal neuralgia. To Anstie, however, belongs undoubtedly that chief merit of so handling the subject and of explaining it with such mastery as to make it his own, and this at present suffices for me as giving me some grounds for farther argument. For the excuse I make to myself for now troubling the reader with these remarks is this—that the classification of migraine as a mere variety of trigeminal

neuralgia seems to me to be, if not untrue, at any rate inadequate. My own thoughts on the matter have followed that course which Julius Charles Hare compendiously indicated as, Yes—No—Yes; the second “Yes” having, however, a different kind of assent to the first. In my earlier professional life, that is, as a young student, I went the way of the multitude to call migraine “biliousness,” and to refer it only to disordered stomach and liver. Then came a strong reaction from that belief, expedited and enforced by a study of the affection as it occurred in my own father; and then, again, came slowly those other considerations which I shall now try to express, and which seem to run back in some measure upon the old creed. The more I see of migraine the more do I consent to the proposition that it is a neuralgia in point of origin and affinity, but also the more am I convinced of the essential part which is played in it by the abdominal viscera. Migraine does unquestionably shade off as years go by into supra-orbital or other trigeminal neuralgia not to be mistaken, and herein is one strong evidence of its actual character; but while it remains migraine—and migraine it often remains for the most of a lifetime—so long, I say, are bound up with it disorders of the chylopoietic viscera, which a new and fascinating hypothesis does not remove by ignoring them. I will not refer to the peculiar characters of the headache itself, nor to its peculiar behaviour under the use of remedies which distinguish it so completely from simple trigeminal pain; for this may find some explanation not incompatible with what I may call the mere trigeminal hypothesis. But I would especially remind the reader—and may I venture to remind Dr. Anstie also?—of those other features of the disorder which are essentially bound up with migraine, and are not bound up with the trigeminal neuralgias even of the same persons. These are as follows:—

1. The well-known vomiting, which differs from “cerebral” vomiting in these points, that it is preceded by long nausea, that the emptying of the stomach brings or gives relief, and that bile is generally cast up in quantities larger than mere retching would account for.
2. That there is very commonly much evidence of disorder of the liver as seen in the physical signs of congestion—in tenderness to pressure, that is—and in small degrees of enlargement;

and as seen in sallowness of face, in lesser and greater degrees of jaundice, and in disorder of the bowels which at one time may result in clay-coloured stools, at another in stools freely or excessively coloured with biliary matters.

3. That we very commonly see also symptoms of great disorder of the stomach, if we may pretend to make any accurate distinction between this head and the preceding; and that these consist for the most part in a foul tongue, in a tender epigastrium, and in a great intolerance of certain kinds of food, especially of certain fermented liquors and of food containing fat. In respect of this latter point, indeed, we commonly find not only a disorder of the stomach for the time, but a permanent inability.

4. That although fatigue and excitement are among the common causes of "sick headache," yet there can be no question that errors of diet do likewise play a great part in their recurrence—that indeed many a one liable to sick headaches can recall them almost at will by giving way to certain temptations in diet which they have learnt by bitter experience to resist.

5. That remedies devised for the better regulation of the stomach and liver, as we suppose, and a rigid dietary, are often very efficacious in warding off attacks, more efficacious perhaps than remedies addressed exclusively to the nervous system.

In these heads of argument I have expressed what each man's knowledge will abundantly confirm, and little more enlargement is needed save that which may best be given by a few illustrative cases which have particular features of importance.

I may refer first to the case of my own relative already mentioned, and which I studied for some years. There is no room for doubt that in his case the sick-headaches took their origin in mental overstrain while at Cambridge. He worked intensely hard, first for college honours and afterwards for the degree. Before the time of final examination, however, the strain began to make itself felt, the head suffered, and the failure of hopes was added to the distress of overwork. On his ordination he was placed almost immediately at the head of a large and important parish, in which he laboured hard for many years. During the whole of this time he suffered horribly from sick-headaches, which returned, say, every four or six weeks, but at uncertain intervals. On his removal in later life to a country

cure, the headaches ceased almost entirely. There is not, nor has there been, any other neurosis in his family before him, during his time, or subsequently. Here then was a case which had undoubtedly a nervous origin, which disappeared when the cause was removed, and which during its worst days was kept at bay by his habit of taking almost a holiday on one day of every week, and one hour's complete relaxation daily at a definite time—from twelve to one. So far then I was justified in taking a strong line in favour of the neuralgic character of the headaches, as against the opinion of my father himself, and of his medical advisers, who at that time declared them to be "all liver." Yet when I now look back upon the case, while holding still to the neuralgic nature of the affection, I cannot but remember many symptoms which pointed distinctly to some substantial implication of the stomach and liver also. The attacks were "sick-headaches" of great severity and quite normal in all their course, but by a close observer the following points were to be noted. First, errors in diet would bring on attacks quite as surely as excitement or overwork; indeed, I almost think more surely. Sad experience had schooled him into a most careful diet, and so surely as he broke through it did he suffer: at dinner and breakfast parties I have seen him, when he had been unable to take a frugal anticipatory meal at home, look helplessly about amid a wilderness of dishes, none of which he dared touch, taking refuge perhaps after all in a roll or piece of bread. The least excess in wine was invariably followed by a bad attack, and fatty foods were as injurious to him as they are to nearly all these sufferers. Rich "made dishes" were his worst enemies, but, as we so often see, fried bacon could be and was (at breakfast at any rate) eaten almost daily with impunity. Now after an error in diet, though the headache was among the first morning consequences, yet jaundice was also very frequent, the liver would be congested and tender, the eyes yellow, the tongue foul, and the bowels disordered.

More than this, if he had time to take a blue pill followed by a seidlitz powder, an attack might often be averted or lessened. Seidlitz powders indeed were among the common furniture of the dressing table, and it could hardly be doubted that a timely use of them often cut short the slighter attacks or lessened the

severer ones. The liver receded, the tongue cleaned, and the head cleared. Now I have ventured to be tedious in thus minutely referring to a case long under my own eye, for the very reason that I believe it to be a common one—a “typical one,” as the phrase is—and to be paralleled in every one’s experience. My point is that here was a well-marked case of sick-headache of the common kind and due originally to causes acting upon the nervous system, and yet with all that presenting other symptoms referable to the chylopoietic viscera and of a kind hardly to be put aside as merely sympathetic. If ever a case was neuralgic, this was, and yet it was as unquestionably dyspeptic also.

To give case after case of this kind would be as easy as it would be useless, but I may pick one or two out of my note-books, to illustrate certain points. In so doing of course I pass by all those indefinite headaches, which are merely symptomatic and accompany common dyspepsia—cases which Dr. Anstie has also set apart; and on the other hand I pass by all headaches unconnected with “sickness,” and which are either trigeminal simply, or are associated with epilepsy and the like. The case of Mrs. B., who consulted me about three weeks ago, serves well for my present purpose. She is evidently a weakly nervous woman, and she comes to me for sick-headaches. Without going into all the details of her case, which present nothing unusual, I may say that she is very sensitive to cold, and if she gets a chill she becomes jaundiced; often she is jaundiced so quickly that if chilled when out of doors she will be yellow before she reaches home. She will then be tender over the liver and tender over the stomach, her tongue will be heavily coated, and a headache will slowly set in. This will hang about her all day, and if no remedies are taken it will be worse next morning, and will pass through the usual course, ending in a free bilious vomit, when the tongue will clean, the liver and stomach will lose their tenderness, and the stools will recover their natural appearance. She may often stop all those evils, however, by a dose of “Cockle’s pills,” or a blue pill followed by Epsom salts; these measures, however, she has been less able to bear of late on account of increasing debility, and hence her coming for further advice. In addition to this exceptional causation, errors in diet and fatigue and excitement act upon her as upon others suffering in like

manner. Take again the case of Mrs. —, a patient of Mr. Ellerton, of Aberford. She has been a martyr to true sick-headaches almost all her life, and her headaches are accompanied by unmistakeable jaundice. In her the jaundice and bad stomach have always been a prominent part of her disorder, and of late especially have shown no little obstinacy. The epigastrium becomes tender, the liver swollen and (when at the worst) very tender, the tongue coats itself with a dense foul fur, and the bowels become disordered, that is, they become confined, and the stools are clay-coloured. While this state of things continues the headaches cannot be got rid of, but recur again and again (twice or thrice a week and more), with temporary relief after the vomiting, until the abdominal symptoms are thoroughly met by mercurial and saline purgatives and by remedies addressed to the stomach, such as nitric acid with cascarrilla and the like. Mr. Ellerton finds that dietetic errors are in her a very common cause of this state of things, and Mrs. —, like most sufferers from sick-headaches, is intolerant of certain wines and of fats—of rich pastry, made dishes, and so forth.¹ In these two cases the liver disorder is undoubtedly more marked than usual, but the difference is one only of degree, and every one will call to mind the sallow skin and muddy eyes by which even when at their best these sufferers will generally betray themselves. Now this is not mere dyspepsia, it is a definite train of events in which the headache takes a prominent part, and in which the nervous system is very deeply concerned. How deeply I know not, and do not see much present opening for guesses. Whether it be some instability in that part of the medulla in which lie the centres of the trigeminal nerve and also of the vaso-motor system, or whether the vagus nerve and the trigeminal are fellows in the matter, we cannot pretend to tell. All I would contend for is that migraine is not a mere trigeminal pain with “cerebral” vomiting, but that it is a complex affection in which abdominal and cephalic disorder go hand in hand, and in which treatment (and here is the justification, if any, for my long discussions in these pages) addressed to the former set of morbid events is at least as important as that which is addressed to the latter.

¹ This lady since suffered from unmixed neuralgia in simple form, viz. cervico-brachial neuralgia.

THE ABDOMINAL COMPLICATIONS OF MIGRAINE, AND THEIR TREATMENT.

BY DR. ANSTIE.

IN the article which immediately precedes this one, Dr. Clifford Allbutt has favoured me with a taste of that searching kind of criticism which is more appetising to a genuine investigator than any quantity of insipid acquiescence. He has brought me sharply to my bearings, and compels me to explain clearly, if I can, much that I had left vague in my discussion of Migraine.

In the first place, I hope that by this time Dr. Allbutt perceives (having read my second paper) that I am not claiming for myself the authorship of the mere classification of migraine as a neuralgia. What I have said is, that the personal (and usually the family) history of migrainous patients, taken together with the remarkable course which the disease runs, even in ordinary cases, and the important and suggestive group of occasional complications which are associated with it, almost compels us (*per viam exclusionis*) to look upon the medulla oblongata as the starting-point of the disease, and to believe that migrainous pain means atrophic molecular irritation in the trigeminus root, that migrainous vomiting means a similar process in the vagus root, and so on for the whole widely varying group of possible phenomena of the disease. I was not rash enough to expect that this theory would be at once accepted in its entirety; and I am well satisfied that Dr. Allbutt agrees with me so far as he does. The question between us now is—how far are the abdominal complications of migraine entitled to take rank as causes, or as aggravators, of the malady: are they to be looked on as of prime importance (as the nervous phenomena

confessedly are, or are they simply accidental, though disagreeable, facts, exerting little or no influence on the progress of the real disease?

I shall at once confess that it is easy to overdraw the picture on my side of the question. Candidly, I believe that much of the difference between Dr. Allbutt and myself arises from the fact that he has looked with keener interest at migraine as seen in middle-aged persons than in the young, while with myself the exact reverse has been the case, and in both of us there were motives of strong personal interest which gave a direction to observation. Granted the accidental origin of the difference, however, it is probable, I think, that the luck was on my side. In looking at migraine as a disease affecting the young, we are surely most likely to get upon the track of its developmental history; and what I would venture to insist upon as of chief value, in my own observations, is the fact, elicited by those observations, that migraine is not only very often the primary stage of ordinary trigeminal neuralgia, but that it is almost the only form of facial neuralgia which occurs during the critical developmental period between puberty and the consolidation of the frame: and further, that even those cases which retain the type of migraine in middle life will almost always be found, on careful inquiry, to have commenced in the youthful period of life, though the attacks may then have been rare, and their real nature often overlooked. Now, when we look at the phenomena of migraine as observed in the young, I think it will not be denied, even by Dr. Allbutt, that we find a marked absence of those more decided symptoms of digestive or hepatic disturbance on which he has emphatically dwelt. In the great majority of such cases, within my experience, the abdominal symptoms have been strictly limited to nausea and vomiting; nor has there been any ground for supposing that the attacks were originally provoked by dietetic indiscretion: although, undoubtedly, nearly any food taken after the attack had commenced tended to aggravate the patient's sufferings. In these cases, moreover, it is certainly not my experience that the vomiting is attended with that violent and excessive straining which is more characteristic of sickness caused by digestive irritation; on the contrary, it does, I believe, exhibit much of

the "effortless" character which Dr. Allbutt rightly assigns to sickness of cerebral origin.

It is not to be denied, however, that migraine in older persons does frequently assume a type more closely resembling that which Dr. Allbutt describes. In some middle-aged persons one does undoubtedly see an amount of hepatic disturbance (as evidenced by partial jaundice, clay-coloured stools, and sometimes even a certain degree of enlargement and tenderness of the liver) which assumes an importance of its own. Moreover, these symptoms are sometimes partially developed before the headache sets in. So far as I know, however, this is never the character of migraine in its earliest stage; it is only observed when the disease has lasted a considerable time. Besides, I am inclined to express the opinion that such hepatic complications, especially when joined with decided foulness of the tongue and other distinct marks of gastric derangement, are in far the greater number of instances the result of erroneous dietetic and medicinal treatment based on mistaken pathological ideas. I would venture to remind Dr. Allbutt of the very case of his own relative which he has related in so interesting a manner. It seems plain from his statement that the early medical treatment of this gentleman was based on an exclusively "hepatic" theory; and one can scarcely doubt that in the days when this occurred the treatment based on such a theory would be mainly *mercurial*, combined, probably, with the use of various purgatives. At any rate it is within my personal knowledge that an enormous number of cases of sick-headache were regularly treated in this manner by the practitioners of from twenty to thirty years ago; and this without any reference to the existence or non-existence of distinct physical signs of hepatic or gastric disease. Nor do I believe that Dr. Allbutt would at all disagree with my opinion that the frequent repetition of this kind of treatment very often sets up a tendency to frequently recurring disturbance of the very kind which it was intended to remedy. It is really shocking to read over in cold blood some of the detailed histories which I have obtained from migrainous patients, of the treatment to which they had been habitually subjected during a large part of their lives. Here, for instance, is the outline of a story told me by a patient not long since. A

lady, now of middle age, belonging to a family whose nervous health was essentially sound, had the misfortune to be born a sickly and feeble infant about a year after her father had suffered from tropical disease of the liver. In infancy she seems to have displayed some irritability of the mucous membranes; and her friends in general, and the family doctor in particular, seem to have seized at once on the idea that her ailments were due to inherited hepatic defects; accordingly she was treated, throughout the earlier years of her life, with frequent doses of calomel, and more lately with podophyllin: all this, be it remembered, though there never was at any time either constipation or jaundice. The periodical attacks of migraine, which seem to have troubled her from an unusually early age, are very clearly described by her as follows:—The first symptom was always throbbing pain at the top of the head, which gradually increased to a tremendous severity. After a time nausea crept gradually on, and culminated in repeated effortless vomiting: first the stomach was emptied of the food, if any happened to be in it, then followed a certain amount of bile, and lastly a certain quantity of thick mucus; but she is quite clear that the attacks often came on during a state of fasting. At last she would fall into an exhausted slumber, and awake, after some hours, with a sore feeling all over the scalp. Unluckily for her, the attacks used to be followed by a certain amount of hypochondriac and epigastric pain (in all human probability muscular), which used regularly to be referred to the liver and treated with repeated leeches and blisters. When she was twenty years old, a very severe attack of migraine was complicated (not a very unusual event) with hemiopia and general failure of vision; the former did not last long, but the mistiness of sight was very bad for two years, and to this day her vision is far from perfect. Latterly her health had gradually a good deal improved, which improvement she herself confesses was at least coincident with the use of a much smaller amount of medicine than she had formerly taken. Within the last few weeks she has had a severe relapse, originally due, as I believe, to fatigue and anxiety in nursing a sick relative, but much aggravated by the mental shock caused by sudden news of the accidental death of a friend. Very unfortunately, as I think,

she treated the earlier symptoms by taking several doses of calomel; this seems to have given some temporary relief, but at present she is exceedingly ill, and the headaches, though frequent and severe, are less formidable than the intense gastric irritability, which has so limited the possibility of nourishing her that she has become extremely exhausted. All her life long she has been advised and encouraged to adopt a most severe system of abstinence; and to this, I believe, is chiefly due the fact that she has at various times suffered severely from hysteria, although her natural temperament appears to be anything but hysterical, nor has she ever had the slightest catamenial disturbance, nor any other likely peripheral source of hysteria.

Now this case appears to me to be merely a type of an exceedingly large class, in which a migraine that ought not to have outlasted the period of youth has assumed an intractable character and become associated with severe abdominal disturbance, simply because the dietetic and medicinal treatment has from first to last been thoroughly mistaken and bad. I would especially dwell upon one tendency which this lady displays in a marked manner, viz. the disposition to avoid nearly every kind of fatty food, from a belief that such things are "bilious." This belief, which is extremely common among migrainous patients, has a fatal tendency to verify itself in the long run; the long-continued abstinence from all fats will at last produce a genuine dyspepsia for such articles; and then indeed, it is true enough, as Dr. Allbutt remarks, that the taking of such articles will inevitably upset the stomach and probably re-induce the migraine. Under such unfortunate circumstances the physician is reduced to a condition of great powerlessness for good; and unless he can by one device or another overcome the fastidiousness of the digestive organs, he will effect but little solid improvement in the patient's state. Sometimes, where even the most cautious and skilful tentatives towards a more varied and copious diet fail of their purpose, we may make the first necessary step in advance by a complete change of climate and surroundings. The keen clear air of a Swiss mountain elevation; the pleasing mental excitement of life amid strange scenes and people; nay, even the force of necessity (from the patient's being thrown into circumstances where a

rude and coarse diet is the only one obtainable)—one or all of these influences together will sometimes effect marvels. I shall never forget the well-nigh incredible results of such a “counsel of despair” which I gave in the case of a migrainous young lady who had very nearly reduced herself to the state of the horse who lived upon one bean a day. She was sent to an out-of-the-way part of Germany, where she lived among pleasant people, but where her necessary daily food consisted of *black bread, sausages, sauerkraut, and very oily salads*. *Mirabile dictu!* she was soon energetically devouring these astounding aliments, and in twelve months her migraine was a thing of the past.

Space fails me, or I could really multiply indefinitely the record of cases, more or less resembling the above, in which the conviction has been forced upon my mind that the general view inculcated in my previous papers is the only really sound and tenable one. I grant, with reluctance, that we do indeed occasionally meet with examples so confirmed, so long standing, and so aggravated by every possible sin of omission and commission which a hysteric fancy or an unfortunate medical theory could suggest, that the malady is really incurable; and we are forced to content ourselves with remedies addressed to those abdominal complications which they can only temporarily alleviate without touching the real source of the malady. Such maimed lives are, in my view, among the saddest evidences of the present imperfection of our art; nor can I submit to regard a state of things in which such cases are frequently met with, as final. I still believe, with all deference to my friend Dr. Allbutt, that were the appropriate treatment addressed to the nervous system at an early stage of migraine, we should not have to trouble ourselves directly with the management of abdominal complications at all, or at least that the number of examples in which these complications would become a subject of special necessary attention would be indefinitely reduced.

ON THE INFLUENCE OF THE CONTINUOUS GALVANIC CURRENT OVER VOLUNTARY MUSCULAR ACTION.

BY G. V. POORE, M.D.,

Assistant Physician to the Charing Cross Hospital.

IN the number of the *Practitioner* for September last will be found a paper by the writer on a case of "Writer's Cramp and general Spasm of the Right Arm," which, though of nine years' standing, was successfully treated by the joint use of the continuous galvanic current, and the rhythmical exercise of the affected muscles. For the benefit of those who may not have read that paper, I may be allowed to say that the method of treatment was as follows:—A continuous current was passed through a single muscle (such as the deltoid) or a group of muscles (such as the flexors of the wrist and hand); and while the muscles were under the influence of the current, the patient was ordered to exercise them voluntarily. This method of treatment was followed by the best results—results which were surprising to myself and my medical friends.

At that time I offered no explanation as to why this method of employing galvanism proved so serviceable. I was inclined to regard the galvanism as of use merely in overcoming muscular spasm, and attributed to the rhythmical exercises most of the permanent improvement which took place. Since then I have had further experience of this method of employing galvanism, and have obtained some insight into the *modus operandi* of the continuous current when thus employed.

One of the usually prominent symptoms in writer's cramp or palsy is a feeling (more or less intense and more or less unbear-

able) of fatigue along the muscles of the arm. This may be limited to the fore-arm, or may extend from the shoulder to the tips of the fingers. I have found that this feeling of fatigue is at once removed by the application of the continuous galvanic current either along the course of the nerves or muscles of the arm. One patient, who has suffered very acutely from this feeling of fatigue, has always expressed great satisfaction during the employment of the current, and has frequently used the words "comfortable" and "pleasant" to express his sensations. He has also often said, "*That seems to give me strength, to give me a sense of power in the arm.*" This patient also had a difficulty in supinating the hand of the right arm. There was no true paralysis, and no visible wasting of any of the muscles (though the whole of the arm and fore-arm was notably flabby, and remarkably non-muscular); but the act of supination was a laboured act, and the patient soon tired of performing it.

On telling him to alternately pronate and supinate the hand, these acts were accomplished tolerably well for the first four times, then the act of supination became slow, and was accomplished with an evident effort, and after four or five more attempts it became impossible; and this, as far as one could see, was not due to any spasm of antagonising muscles. When the supination came to a standstill, I placed the positive sponge-holder of my battery as near as possible over the spot where the musculo-spiral nerve turns forwards at the outer part of the elbow-joint, and the negative on the spot where the radial nerve becomes superficial on the radial border of the fore-arm. The number of elements employed was sufficient to cause an appreciable but not painful sensation to the patient. This seemed to help the supinators over their difficulty, and the patient continued to pronate and supinate his hand without the least trouble, telling me at the time that "he could do it much easier when I passed the current," and also "*that it seemed to give him strength.*" Other muscular exercises were practised with this patient, such as repeated flexings and extendings of the fingers or of the thumb alone, and he always said that the movements were accomplished more easily, and he got less readily fatigued when a galvanic current was passed through the muscles implicated, or along the nerve supplying

them. "It seems," he said, "to give me strength and power." One is not inclined, at least I am not, to pay much attention to the sensations and expressions of a patient; and although my patient was an intelligent man, I thought nothing of what he said until I found another (also suffering from writer's cramp) who said precisely the same thing, "that he could accomplish repeated muscular acts with far greater ease during the passing of a current, and that after the employment of the current he had a feeling of strength and power in the arm." This latter patient's expressions demanded attention, for he was a medical man, and himself accustomed to the employment of electricity. This gentleman suffered acutely from the miserable feeling of fatigue in his arm; and though his muscles are big, and he is decidedly athletic, he soon tires of repeated exercises. This tiring of the muscles and the feeling of fatigue were both obviated by the employment of the current.

From these disjointed observations I got the idea that the passage of the continuous current through muscles, or the nerves supplying them, increases the susceptibility of those muscles to the stimulus of the will, and that their voluntary power is thereby greatly increased.

I proceeded to submit this notion to the test of experiment, and nearly every experiment I have made goes to prove the correctness of my theory.

The first experiment was made upon the patient (H. M.) first mentioned in this paper. I asked him to hold his left arm at right angles to his body, and in the palm of the hand I placed a weight of seventeen ounces. "Now," said I, "tell me when you begin to feel tired, and that you can go on no longer." In about four minutes (the experiment was only tentative and not exact) he complained of great pain in his muscles—deltoid, triceps, biceps, and fore-arm—and declared his inability to go on. I then placed the positive rheophore high up in the axilla, and applied the negative one to the painful parts, when he at once said, "All the fatigue is gone, and I feel as strong as when I began." On the evening of the same day a scientific friend kindly submitted himself to a similar experiment, and the result was the same. When the sponges were applied, he said, "All the fatigue is gone; I feel just as though some one had given my

hand a support." I need hardly say that great care was taken not in any way to support the limb with the rheophores; in fact in these experiments one of the rheophores at all events has generally been as an additional burden to the arm. The current employed has hardly ever been strong enough to produce involuntary contraction of the muscles. My next experiment was made on a student of medicine, Mr. L. S. The result was exactly similar. At the end of seventy seconds he began to make complaints of pain and fatigue, which the current at once removed, and he continued to support the weight for five minutes and a quarter, declaring at the end that if I wished he could still go on, which I would not allow. This was the right hand. We then tried the left hand, without employing any current at all. He broke down in considerable pain after holding the weight for two minutes and a quarter. In the evening of the same day he stated that his left hand had been aching all day, but that the right had not given him any trouble. Two days later we tried the right arm again, but without using the current. He managed with the greatest difficulty to support the weight for three minutes and ten seconds, and the effort was followed by considerable aching and pain. On December 6th I asked my patient H. M. to hold the weight in his left hand, and on this occasion no electricity was used. He is a man whose power of endurance is very great, and he managed to sustain the weight for *six minutes*, but endured considerable pain and fatigue while doing so. On December 7th I first galvanised the arm, and then got him to repeat the experiment, and while the experiment was in progress I occasionally passed a current down the arm and through those muscles in which any sense of fatigue or pain was developed. On this occasion he managed to sustain the weight for *thirteen minutes and a half*, a time which I should think few, if any, men could accomplish without aid. Similar experiments to these have been tried on several of my friends, and they all tend to show that the endurance of voluntary muscular action is enormously increased by the passage of a continuous current, and that the feeling of fatigue, both during and after the prolonged effort, is mitigated or entirely obviated. It may be that the first result is merely a consequence of the second.

Experiments have also been made, and with results which tend to show that the force, as well as the endurance, of voluntary muscular action is increased by employing a galvanic current. The muscles experimented upon have been the flexors of the fingers, the contracting force of the muscles being registered by the squeezing of a spring dynamometer held in the hand.

The person experimented upon has been directed to squeeze the dynamometer several times in succession, an interval of ten seconds being allowed between each squeeze. The force of each successive squeeze was noted, great care being taken that the position of the dynamometer in the hand and the position of the patient should remain constant throughout the experiment. Two sets of observations were made, one with and one without the aid of galvanism. The patient was directed to put out his whole strength for every squeeze. The strength of current varied in different cases (the sensitiveness of individuals varying), but was always just sufficient to cause a gentle tingling sensation along the course of the nerve which one wished to affect. In these cases it was sought to affect the median nerve, and for this end the positive sponge was placed at the inner border of the biceps muscle, and the negative on the inner side of the tendons of the biceps at the bend of the elbow. The force of each squeeze is expressed in pounds.

The following is the result of one of several experiments made upon myself. The figures show the result in pounds of each successive squeeze :—

Dynamometer in	{ without galvanism	. 55, 55, 55, 50, 47, 44, 42, 40=388.
left hand,	{ with galvanism	. 73, 65, 63, 60, 56, 54, 53, 53=477.

The total results of these two experiments give 89 lbs. in favour of galvanism, or an average of 11.125 lbs. per squeeze. I should add that the experiment with galvanism was made about ten minutes after the first, and I was distinctly conscious of the fatigue of the first experiment when the second commenced. On the following day the experiment was reversed, and the trial of strength with galvanism preceded the other. Thus :—

Left hand,	{ with galvanism	. 73, 76, 72, 70, 70, 70=431.
	{ without galvanism	60, 47, 45, 40, 46, 41=279.

The sources of error in these experiments are very numerous. It has been mentioned that great care is required that neither the position of the patient nor the dynamometer should undergo any change during an experiment. There is a certain *knack* required in using the dynamometer so as to get the maximum results, a *knack* which is only acquired after more or less practice. Some persons easily bruise the hand during experiments, and then further results are necessarily fallacious, since the pain of pushing against the bruised surface impedes the putting forth of power. A trifling variation in the state of health will cause a great variation in the strength, and a man who can squeeze with a force of 70 lbs. one day, will, perhaps, not be able to make the dynamometer register half that amount on the next. Some persons have skins so sensitive that it is impossible to affect the nerves; and lastly, if the dynamometer is jerked during the experiment, the registering index may be jerked forwards or backwards. Experiments which seemed to be complicated by any of these sources of error were excluded. The following experiment was made upon Mr. L. S., a medical student. The row of figures shows the result of successive squeezes. The employment of galvanism was intermittent during this experiment. The black figures show the results obtained during its employment, and the light ones the results when it was allowed to intermit:—

85, 81, 72, 75, 80, 75, 76, 75, 60, 65, 54, 80, 72, 82, 70, 76, 51, 54,
80, 80, 67, 78, 68, 58, 81.

This experiment shows, like the experiment with the weight, that the power of endurance is increased by the employment of galvanism. This gentleman gave twenty-five squeezes, and the last was within four pounds of the first. Several experiments have been made with this gentleman, and he has always stated that the galvanism seemed to give him power, and that the results obtained while it was being used did not appear to demand from him so great a voluntary effort. Similar expressions have also been made by others.

The majority of my experiments, typical samples of which I have alone given, tend with greater or less force to show that the force and endurance of voluntary muscular action are both increased by the passing of a galvanic current through the

nerves or muscles implicated ; but as I have above stated, it is exceedingly difficult to get constant results with the spring dynamometer, and although my experiments with this instrument all tend one way, I do not regard the results as final.

The therapeutic importance of this fact is, I think, considerable, and is likely to lead to the combined use of electricity and voluntary movements in many diseases where there is only partial impairment of muscular power. The case which I published in September is only a solitary example of the benefits of this method of treatment, and is consequently of little value. I may mention, however, that I have two similar cases now under my care which are being treated in the same way, and are making rapid progress. It seems to me better in all cases where it is possible to let a muscle react to its proper stimulus the will, than to employ for the purpose of causing muscular contraction a stimulus which is wholly artificial. I should mention that the effect of the galvanic current seems to endure for some time after its discontinuance : how long we cannot say ; but my patients, if this is worth anything, tell me that their arms retain the feeling of power and strength for about an hour. I am hoping to be able to make further experiments on the effect of a galvanic current upon common sensation.

Reviews.

Cooper's Dictionary of Practical Surgery. New Edition. By SAMUEL A. LANE, Consulting Surgeon to St. Mary's and the Lock Hospitals, &c. &c., assisted by various eminent Surgeons. In Two Volumes. London: Longmans and Co., 1872.

Erichsen's Science and Art of Surgery. Sixth Edition. Enlarged and carefully revised. Two Volumes. London: Longmans and Co., 1872.

The Practice of Surgery: a Manual. By THOMAS BRYANT, F.R.C.S., Surgeon to Guy's Hospital. One Volume, pp. 1,088, with 507 Illustrations. London: Churchill, 1872.

The Science and Practice of Surgery. Illustrated by 470 Wood Engravings. By FREDERICK JAMES GANT, F.R.C.S., Surgeon to the Royal Free Hospital, formerly Surgeon to her Majesty's Military Hospitals, Crimea and Scutari.

WE cannot help wondering, every time that we open a general treatise on surgery—at least by any modern English writer—by what mystery of Providence it happens that the whole thing seems so dull. The subject-matters of such a treatise necessarily include a large number of questions which are intrinsically of deep interest, and even the more trivial matters are invested with that kind of attraction which is always possessed by practical subjects. Yet so it is, that this class of books has always appeared to us very dreary.¹ In some cases the cause of this is more obvious than in others: thus, a certain percentage of English surgical writers are destitute of the power to write grammatically or with decent construction; and a still larger proportion have never attained to the faintest notion of artistic beauty in the arrangement of their materials. We do indeed possess two great surgeons in this country who are also masters of the literary art—Mr. Simon and Sir James Paget; and each of them has produced a work on surgical pathology which is worthy to rank with the most famous medical

¹ We are by no means sure that German, French, or American surgical works are any better.

treatises of any age. Among our junior surgeons, also, there are two or three, whom it would be invidious to name, that write excellently. But the average British surgeon, even of the higher class, has little notion how to tell his story; and we are sorry to say that, on the whole, the writers before us abundantly illustrate this fact. Something more subtle, however, than the mere boredom produced by bad writing must surely be afflicting our nerves, or we should not hate our surgical friends with that bitter (though quite temporary) hatred which we feel after trying to read their books. There have been moments when the dearest wish of our heart has been to play at skittles, with some nine or ten eminent surgeons as pins, and their own ponderous and sharp-cornered works as skittle-balls.

We must say, however, that there are great differences, of merit and of demerit, between the books now before us. Of Mr. Erichsen's work we are perhaps not called upon to say much, since the extensive popularity which it has enjoyed shows that it possesses very solid value. We shall just say, in this place, that the style, if not fascinating, is sensible and free from scientific "high falutin:" moreover, much diligence has been exercised to make the treatise complete and level with the recent advances of surgery. Of one special feature, visible throughout these volumes, we shall speak further on.

Cooper's Surgical Dictionary, again, is a very widely known work, which, no doubt, has been of service in its day: and several of the modern additions to it are respectable representations of British Surgery: nevertheless there is only one article of the new edition which is really first-rate. That article is Dr. Druitt's, "On Inflammation," and it is with feelings of admiration mingled with deep regret that we remember the infirmity of the author's health, which must, indeed, have been pressing heavily upon him while he was writing this remarkable treatise. For once the critic is able to praise with unstinted breath; and we would venture to say that if it unhappily chanced that Dr. Druitt should now have to retire from active labour in the field of medical science, he could hardly have wished to close his labours more worthily. Not merely is the article most elaborately complete in the sketch which it gives of the growth of medical doctrine respecting inflammation from quite ancient times down to the latest researches of Cohnheim and Stricker and Burdon-Sanderson, but the whole mass of information is admirably assimilated and worked up into a continuous story, with true artistic literary feeling; so that on finishing its perusal the reader feels that, in the most pleasant way possible, he has been made to understand all about the matter. It is the best piece of medical writing that has been done for some years.

There are many other very worthy and even important articles in the Dictionary, but many of them are already well known, and there is really little to attract much attention. Some things, however, are a positive offence. We have always felt it to be ill-judged, not to say presumptuous, on the part of surgical writers to deal at all with the general subject of neuralgia, since the only occasions on which a surgeon can usefully intervene at all, in the treatment of this affection, are those exceedingly rare cases in which some impacted foreign body has to be removed, or where it may be thought worth while to try the (well-nigh desperate) remedy of excision of a piece of the nerve. Meanwhile it is certain that the narrow and unenlightened spirit in which the surgeons have dealt with neuralgia has greatly contributed to the obscurity in which that disease has so long rested. Accordingly, we were not surprised to find that the subject is treated, in all of the works before us, in a way which is both inadequate and seriously misleading. But we were quite unprepared to find so excellent an observer as Mr. Charles Hunter making himself responsible for the appearance of an article on neuralgia, the publication of which at the present day is really a grave fault. Mr. Hunter has done exceedingly well in the article on a subject which is more especially his own—that of subcutaneous injection; and one would have thought that his large experience in this matter must necessarily have given him more insight into the pathology of neuralgia than he here displays. The article on this disease is by no means up to the date even of 1865, the year in which it was apparently written; and the whole mass of information on the subject which has since appeared is left out of view. Then again there are some singular and unaccountable omissions of important subjects: *e.g.*, the very interesting topic of skin-transplantation, at any rate in the manner suggested by Reverdin, is nowhere even mentioned, as far as we can see; whereas it certainly deserved a special article, and a very careful discussion. In Mr. Erichsen's article on aneurism, able as it is, there are so many omissions of modern facts as to make it obvious that the corrections have not been carried down to the present time. But this leads us also to notice that even in the new edition of Mr. Erichsen's own book, the treatment of aneurisms of the great arteries, though much more fully dealt with, is in several respects so incomplete as to be misleading. For example, he greatly underrates the importance of the inference to be drawn from Mr. Heath's first distal operation (ligature of carotid and subclavian) in a case which proved (after death, *four years later*¹) to have been pure aortic aneurism; and he nowhere mentions Mr. Heath's more recent case, in which

¹ This, too, although the woman continually drank herself blind drunk, and in every way seemed determined not to give herself the slightest chance.

aortic aneurism was treated by ligature of the left carotid only. Nor is the following sentence in accordance with the fact: "Others have tried to obtain consolidation of the (aortic) tumour by means of galvanism, or by thrusting coils of iron wire or catgut into its interior." It is unjust to place galvano-puncture on a level with the other remedies here coupled with it: and a writer on surgery at the present day ought to be aware that more than one remarkable success has been obtained by the former method. And the slighting manner in which the principle of distal ligature in aortic aneurisms is dealt with by Mr. Erichsen is quite incomprehensible. We are greatly surprised also to observe the amount of respect with which this author still speaks of the plan of treatment invented by Valsalva.

When we come to speak of the two new treatises, by Mr. Bryant and Mr. Gant respectively, we feel ourselves in a really painful difficulty. Here is an immense quantity of labour expended, with results which cannot be regarded as satisfactory. On one point, with respect to which Mr. Gant has received rather sharp treatment from his previous reviewers, we feel bound to say a word or two. We fear it is impossible to deny that a rather considerable portion of his bulky volume consists of almost textual quotations from the works of other writers, and he has certainly availed himself, to a somewhat unusual extent, of borrowed illustrations. It would be highly unjust to mention this fact, however, without saying something further in order to give the matter its true colour. All this borrowing from others is done in the most open and innocent manner; and no candid reader has any more reason to suspect Mr. Gant of the wish to take credit for other folk's work than have his private acquaintances, who know him, in fact, to be entirely incapable of such an ungenerous desire. Nevertheless it cannot be doubted that from his very modesty in talking so much of the opinions of others, and from some other causes, Mr. Gant has failed to put a backbone of individuality into his book; and we must confess to have strongly felt that weariness of which we have already spoken, in turning over its pages. Moreover, we regret, as a decidedly injudicious and mischievous proceeding, the introduction of such trivial discussions as those given in this volume, of great constitutional diseases like rheumatism and gout, with which the surgeon has but small concern, and about which it were far better to keep silence than to talk in a hurried and superficial way. Delirium tremens, which used to receive some discussion in almost every surgical treatise (on account of the liability of drunkards to this affection when they are suffering from severe surgical injury), is not specifically dealt with at all by Mr. Gant, and herein we think he shows his wisdom: for it is certainly better not to discuss the subject at all than to deal

with it in the superficial and misleading manner in which Mr. Bryant treats it. If it be really true, as he says, that "opium is the drug chiefly in favour" with the surgeons, then we can only say that the surgeons are living in a state of startling ignorance. We are glad to see that Cooper contains no special article on this disease. We would express very decidedly the opinion that surgical writers ought either frankly to confess that the supervention of delirium tremens upon a surgical injury calls for the intervention of the physician, or else they should take the trouble to study the effects of alcoholism with completeness, and, above all, that they ought in such case to study with great care the altered relations as regards tolerance of narcotic drugs, which are imposed upon the organism by chronic alcoholic poisoning. To return to more properly surgical matters, it may be well to choose Mr. Gant's treatment of that important subject, excision of joints, as a kind of test of the higher merits of his book. It is a painstaking and sufficiently full discussion of the whole subject, and the author here shows at nearly his best, giving more evidence, than in some other parts of the book, of having been personally a worker and thinker on the topic in hand. We do not hesitate to say that if the whole treatise had corresponded to the merits of this section, our general verdict would have been considerably more favourable.

Of Mr. Bryant's book we can, in some respects, speak more favourably than of Mr. Gant's: it is certainly much more individual; and in the somewhat important matter of the proportion of original illustrations, altogether drives its rival out of the field, for, of 500 engravings, 400 are original. Mr. Bryant also seems to have seen things from his own point of view in most instances. Upon the question of his literary style some words should be said. Mr. Bryant has already been publicly crucified by a critic who, pretty obviously, had not read further than the preface, which latter document is certainly a most extraordinary specimen of English writing; but it is fair to say that other parts of the volume do not correspond in style to the preface. Indeed, no one who has heard Mr. Bryant speak at the medical societies could suppose that the defects of ordinary construction to be observed in his book are due to anything but want of care; still it must be confessed that there is *great* want of care in many parts of the book. And indeed Mr. Gant also sins greatly in this respect. Here is a bit from the latter author, which is certainly very funny:—"They are the 'internal' exciting causes of inflammation. The significance of their operation, and the efficacy of their removal, as causes of inflammation, are well illustrated in the every-day practice of surgery."

One final circumstance we must note, in concluding our notice

of these four surgical works; which is, that surgeons are still *bloodthirsty*, to a degree not comprehensible by physicians or general practitioners. It is really surprising to notice how authors of high general ability and knowledge of modern progress can still cling to conventional modes of dealing with acute inflammation, which have no longer the slightest support from physiological science. We are bound to say that both Mr. Bryant and Mr. Gant seem more cautious and discriminating as to these and other traditional modes of treatment. But it is really a fact, we believe, that surgeons generally do cherish a partiality for heroic measures, which inclines them, *inter alia*, to blood-letting and severe purging. There is a good deal too much of that kind of thing in almost every surgical book one takes up: a fact which somewhat painfully suggests that our surgical friends do not very often reflect on questions of medical physiology.

Clinic of the Month.

On the Stomach Pump in the Treatment of Chronic Gastric Catarrh and Dilatation.—Dr. Schliep, in a paper read before the Clinical Society of London, remarks that in many cases the results of the application of the stomach-pump had been eminently satisfactory, and appeared in general in the following order :—Vomiting ceased, pains disappeared, appetite and action of the bowels soon became better, and general health was improved, and the patient's weight was increased. In some cases it was found desirable to wash out the stomach with solutions of various medicines ; and he tried soda, creasote, boracic acid, and permanganate of potash with good effect. The patients soon became accustomed to the introduction of the pipes, and, after several applications, the unpleasantness of the operation disappeared entirely. The fear of sucking some mucous membrane into the opening of the tube was almost without foundation, and such an event might be avoided by care and by inserting an india-rubber tube between the pipe and the pump, which would close as soon as any impediment opposed the flow of liquid to the pipe. It happened once to Dr. Schliep, in about six hundred applications of the pump, to bring up a small piece of the membrane, when the patient himself pulled out the tube somewhat suddenly after the finishing of the operation ; but no bad consequences followed. Considering the advantages of the stomach-pump in the cases alluded to, Dr. Schliep believes that this method of treatment will take an important place in the therapeutical agents in stomach diseases. (*Lancet*, Dec. 14, 1872.)

On Meningitis.—In a clinical lecture delivered in the Hospital for Sick Children in Great Ormond Street, by Dr. Cheadle, he remarks that it is impossible to say how small a matter may turn the scale when the balance swings evenly ; and although in the vast majority of instances the series of pathological changes are so serious as to be necessarily fatal from the first moment of their initiation, and their course cannot be materially modified by any external influences we are able to bring to bear upon them, yet now and again the morbid

series may be less extreme, the results produced reparable, and the recovery possible. Upon such critical cases our action may be decisive for good or evil. It is true that we cannot judge with exactitude what the favourable and unfavourable conditions are, but we know roughly that violent measures, such as bleeding and hard purging, must hasten death; that their influence on the general condition must be hurtful: for while we have no evidence that they have the slightest power in modifying the inflammatory process, we know that they are directly injurious in certain ascertained effects. The loss of blood will increase the tendency to serous effusion and convulsion, which are great sources of danger; while the free purging will eventually favour a similar result by impoverishing the blood, through the drain of albumen which it involves. Both processes are exhausting and inimical to the ready repair of injured tissues. On the other hand, it is known that careful feeding, healthy surroundings, a judicious regulation of symptoms by drugs, the assistance by artificial means of natural functions, which are in abeyance, favour recovery from disease generally. These measures must be adopted in acute hydrocephalus as in the rest; and when symptoms indicative of serous effusion within the cranium become apparent, such as dilatation of the pupil, slowness of pulse, and stupor, we may legitimately attempt to relieve this by a brisk purge or by diuretics. He has seen the most remarkable improvement follow a cathartic dose of calomel; and Dr. Cheadle thinks that the reputed efficacy of purgatives in this disease is due to their influence in temporarily lessening the fluid in the cranium. The condition of the patient in such cases is probably utterly hopeless, and the advantage gained transient and futile; yet we must give such relief when we can. It is, however, he thinks, our duty to do even more. While we are bound to avoid those rude and violent measures which, we have reason to believe, do positive harm by their general action on the system, there are two powerful agents which we may bring into play, which certainly do not seem to be injurious in their general effects upon children—at any rate at the time—and during the administration of which, if not by their influence, recovery has taken place in certain instances. Dr. Cheadle considers that both mercury and iodide of potassium are well borne by children. It may be seen with regard to the former every day in cases of congenital syphilis, and in certain forms of chronic vomiting and diarrhoea, in which mercury is given in small doses in the form of grey powder for a considerable time, not only without producing the specific effects of the drug, but usually with the most positive and palpable good results. A few seemingly hopeless cases of acute

hydrocephalus have recovered under mercurial treatment; and it is well at the outset to attempt to regulate the torpid bowels, and relieve vomiting by small doses of grey powder twice or thrice a day. (*British Medical Journal*, Dec. 14, 1872.)

Mercury in the Treatment of Bronchitic Asthma.—Dr. Thorowgood, of the Hospital for Diseases of the Chest, observes that ordinary spasmodic asthma is a spasmodic neurosis of the lungs, and may, even in the most severe cases, be quite independent of any inflammatory or organic change in the pulmonary structures. Hence it is that we often get excellent cures by the employment of medicines of the nerve-tonic class, such as iron, quinine, arsenic, silver, and zinc, with the occasional assistance of certain sedative preparations, such as belladonna, stramonium, datura tatula, &c.

In dealing with the complaint, which he calls bronchitic asthma, a different plan of treatment is required, and he believes an important medicine in real bronchitic asthma is found in mercury. To illustrate the remedial action of this drug, he appends short notes of several cases in which mercurial treatment was employed with success.

In bronchitic asthma he thinks we have present a more or less active inflammation of the bronchial tubes, complicated with severe and trying attacks of bronchial spasm or asthma, the last being dependent on the first, so that if we cure the inflammation the attacks of spasm speedily cease.

As a general rule these cases of bronchitic asthma arise from cold. The patient is feverish at night, with perhaps some sweating; his pulse is quick, and his urine loaded with lithates. Towards dawn of day, or earlier in the night, he coughs severely, and has to sit propped up in a regular asthmatic paroxysm. There is tendency to basic congestion of lungs, with bronchial râles, and at times there may be some hæmoptysis.

Such are the cases in which a small pill of pil. hydrarg. c. pulv. scillæ, or of hydrarg. c. creta c. pulv. ipecac. et ext. conii, at bedtime or oftener, will succeed in giving great and permanent relief. (*Medical Press and Circular*, Dec. 18, 1872.)

Lecture on Diseases and Injuries of the Ear.—Dr. Dalby states that, in undertaking the treatment of a case of polypus of the ear, it is well at once to recognise its possible tediousness and the necessary perseverance that may be required both on the part of the surgeon and patient to effect its complete eradication. It is perfectly useless to remove polypi and to do no more. No sooner are they taken away than they at once commence to grow again, and for this reason their extraction should be regarded merely as the preliminary step in treatment. When the meatus has been syringed, light should be reflected from a

mirror worn on the head, as in using the laryngoscope; both hands will thus be free. The growth should be carefully examined with a probe, to estimate as nearly as possible the exact spot from which it springs. If it be a large polypus, a speculum will not be necessary, and a convenient instrument to use is a Wilde's snare. The noose should be made of fine fishing gimp, as this runs more easily through the rings than wire. When it is placed round the growth, and the point of the snare pressed as close to the root as possible, it should be made to cut its way through. If the polypus is not readily seen without a speculum, the largest one that the meatus will hold being placed in it, and the light reflected down it, the growth may be seized by a pair of rectangular ring forceps and pulled away. The root must now have a caustic regularly applied to it until it shows no further signs of re-growth. The caustic must be a strong one. Nitrate of silver is too weak. Potassa fusa and nitric acid are somewhat unmanageable, as they are apt to spread on to parts which it is not desirable should be touched. Mr. Dalby is in the habit of using chloro-acetic acid on a small camel-hair brush, and applying it very freely. If the pain in doing this is very severe, it subsides immediately after using a syringe of water. Eight or ten applications may be enough, but there can be no rule laid down for this. The chief causes of failure in the treatment of polypus of the ear may be found, firstly, in the insufficient use of caustic—insufficient because not continued for a long enough period; secondly, in the neglect of assiduous care in cleansing the middle ear and inducing a healthy condition of its living membrane. Perseverance in these cases is absolutely required, so that work may not be half done, and that patients may not be dismissed only to re-appear some months later with another growth in the same situation as one that has been removed. (*Lancet*, Dec. 14, 1872.)

The Application of Nitrate of Silver as a Cause of Stricture of the Urethra.—Mr. Owen Aspray believes that the treatment of urethritis by injection is the best method in the majority of cases, and that it will never produce stricture if the solution employed be weak enough at first, and the patient be properly instructed as to the mode of using. It appears to him a rather significant fact that the nitrate of silver has always been the medicament used, either in a solid form or in solution, in those rare cases where he could venture to put down a particular local application as the cause of the complaint. This is not so much to be wondered at, if it be considered that the effect of a nitrate of silver injection upon the healthy subject is to produce ardor urinæ, and a thick yellow discharge, *i.e.*, acute

urethritis. The first case in which he discovered this cause was that of a gentleman who had been unnecessarily cauterised for emissions nearly twenty years previously; the stricture would not at first admit a No. 1 bougie: he had never had gonorrhœa. The other cases are not quite so clearly traced, because the individuals had suffered from gonorrhœa; in one, the patient had used a strong solution of the salt on his own account, which produced retention immediately, and after this was relieved he had symptoms of stricture, which he had never noticed before. Mr. Aspray never uses this salt in the treatment of urethral complaints, for he thinks it is one we can very well do without. He does not know any treatment of gonorrhœa more likely to produce stricture than what is called the abortive, and, added to this, it rarely cures the disease. He was induced to speak thus plainly, because he has lately become aware that an eminent member of the profession has ordered this injection in the early stage of the complaint. (*Medical Press and Circular*, Dec. 18, 1872.)

Extracts from British and Foreign Journals.

Rupture of the Uterus with Escape of Fœtus into the Peritoneal Cavity—Gastrotomy on the Fifth Day—Successful Result.—Such is the heading of a remarkable case described by M. Fourrier, of Compiègne, and of which the following embrace the more important details. On the 18th December, 1871, M. Fourrier was requested by Dr. Chevalier to see a patient living near Compiègne. She was twenty-nine years of age, of good constitution, and had already had two children. She had become *enceinte* in March, and six weeks previously to being seen she slipped downstairs, but suffered nothing more than some severe pain, which disappeared after some days. On the 14th December labour pains supervened, and a midwife was called in, who, finding that labour progressed but slowly, administered thirty grains of ergot. The pains increased in severity, the membranes broke, and all appeared to progress regularly till ten on the following morning, when, after a violent pain, the labour suddenly stopped, and the pain, to use the woman's own expression, ascended into the belly (*la douleur remontait dans la ventre*). The patient continued to suffer moderate pain throughout the day, and walked about in her room, but could not stand erect. At 8 P.M. there was a slight hæmorrhage of about three-quarters of a pint. On the following day a good deal of pain was experienced on the right side of the belly, and she suffered from vomiting and hiccup. On the 17th December M. Chevalier and M. Canivet were called in, and were unable to discover any signs of the fœtus in the uterus. They therefore came to the conclusion that the uterus had ruptured. When Dr. Fourrier examined her he found her lying on her back, with persistent hiccup, and much vomited matter around her. Face much altered in expression, but without the pinched aspect of peritonitis. The pulse was almost imperceptible and could not be counted; the heart was beating feebly, about 130 or 140 times in a minute; the temperature was well maintained; the lips were not pale, and there was consequently no reason for suspecting severe internal hæmorrhage. The abdomen presented a remarkable appearance; it was easy to

distinguish two tumours, one on the right, the other on the left; there was a little meteorism. The belly was not very tender on pressure, and by manipulation the two tumours could be perfectly separated from one another, the right obviously containing the foetus and its appurtenances. The left was clearly the uterus; a little sanguinolent fluid was discharged by the vagina. Such was the case before them: a ruptured uterus, with the child escaped four days previously into the abdominal cavity, together with its membranes. The question was, what was to be done? After some consultation, considering the comparatively favourable condition of the patient, gastrotomy was proposed and accepted. The first difficulty that presented itself was whether it would be prudent to administer chloroform; it was determined to try it with great precaution, and it answered well. The patient being brought to the window, an incision about six inches in length was made, from the outside of the rectus to the iliac crest at the level of the umbilicus, or rather three centimetres below it, the incision running slightly downwards and outwards. The several layers of the abdominal parietes were successively divided, two small arteries alone requiring the ligature. On opening the peritoneum a considerable quantity of dark and rather foetid fluid escaped, consisting of the altered amniotic fluid. The foetus occupied its common uterine position, viz. the anterior left occipito-iliac position, only here the occiput was separated from the left iliac bone by the uterus. The feet were sought, and with some care the whole foetus and its membranes were extracted. Great care was taken in dressing the wound, the belly was invested with cotton-wool, and a light bandage applied. The operation produced an immediate improvement in the state of the patient, the pulse becoming more perceptible, and a little wine and beef-tea were administered. In the evening all was going on well: she had passed water naturally, and the hiccup was less constant; vomiting had occurred twice. On the second day, the 19th, the face was pinched, the pulse 140. There had been two liquid evacuations: a brownish foetid liquid escaped from the vagina; light pressure on the belly caused a large quantity of brownish or blackish foetid fluid to escape from the wound. The abdominal cavity was well washed out with an injection of carbolic acid containing $\frac{1}{1,000}$ of the acid, and the vagina was several times injected with the same fluid. On the 20th the vomitings had entirely ceased; the lips of the wound were greyish gangrenous, and the liquid escaping from the wound was extremely foetid. The injections made by the wound did not escape by the vagina. For the next three days she remained in the same state. The pulse on the 23rd became imperceptible, the foetidity of the discharge still greater; the motions were passed involun-

tarily. Alcohol, ice, quinine, and the injections were continued. By the 25th an improvement had taken place, suppuration took place from the borders of the wound, the pus gradually improving in quality. From this time till the 14th January she continued to improve. At this date a relapse occurred; she had a shivering fit, and all the symptoms recurred. She was ordered a ptisan of centaury, beef-tea, lemonade made with citric acid, seltzer water, fifteen grains of sulphate of quinine in six doses, given every four hours. From this time forth she made a good recovery. The case is well reported. (*Bulletin Général de Thérapeutique*, August 15, 1872.)

Relations of Impetigo Contagiosa to Vaccinia.—Dr. Piffard quotes Dr. Tilbury Fox's description of impetigo contagiosa to the effect that it frequently commences by the appearance of constitutional symptoms of a pyrexial character, varying in severity in different cases. In two or three days one or more small vesicles appear, followed from time to time by others. The vesicles gradually enlarge in size, and two or three days later dry into thin light-yellowish or straw-coloured scabs or crusts. The vesicles and crusts may be indefinite in number, and successive eruptions may prolong the disease for months. During the progress of the affection, associates, adults as well as children, may become the subjects of a similar eruption. Inoculation with the fluid contained in the vesicles will produce similar lesions both upon those who are affected with the disease and upon others. Left to itself or improperly managed, the affection may last for an indefinite period; but if properly treated by the application of mild mercurial, sulphur, iodic, or carbolic ointment, it may be promptly cured. Dr. Piffard's experience agrees with Dr. Fox's in finding that it frequently follows vaccination, and this led him to suspect that there existed some closer connection between the two than mere coincidence; he therefore made a careful microscopical examination of vaccine matter with amplifying powers of from 500 to 1,500 linear. Nothing of an organised nature was discoverable, with the exception of minute bodies, by Beale termed "bioplasts," and by Chauveau "vaccinads." But these bodies have been shown by Chauveau to be the active agents of vaccinia, and consequently a necessary and normal constituent of pure lymph. The results of the examination of the vaccine lymph therefore proving negative, attention was directed to the crusts. Portions of vaccine crusts were placed in small phials and clean test-tubes, and a little more than covered with solutions of caustic soda, potassa, or ammonia, of varying strengths. After the lapse of from one to twenty-four hours, depending upon the strength of the caustic solution employed, more or less complete lique-

faction of the crusts was found to have taken place. A drop of this fluid was removed from the phial by pouring it upon the slide, and examined microscopically with the same amplifying powers employed in examination of lymph; upwards of twenty vaccine crusts were examined, and in every instance fungoid bodies, similar to those observed in impetigo contagiosa, were found, with the sole difference that in vaccine crusts the fungus was more abundant and more luxuriant than in the majority of crusts derived from the other affection. In the first place there were found small thread-like filaments about the $\frac{1}{20,000}$ of an inch in breadth, but of varying lengths. They resemble the *Leptothrix buccalis* more closely than any other body with which we are acquainted. Secondly, there were small circles, ranging in diameter from $\frac{1}{10,000}$ to $\frac{1}{3,000}$ of an inch, and greatly resembling the red-blood discs, except as to size, as has been before referred to. Thirdly, there were larger rings or circles; and fourthly, irregular figures of various forms. The circles, large and small, and the other figures, appeared as if they might have been formed by the junction of the ends of a filament, and exhibited every eccentricity of design which might be impressed upon an elastic ring. It is possible, however, that the irregular figures, instead of being formed from filaments, originally commenced as small molecules or rings, which, spreading peripherally until they had obtained a certain size, had a different form impressed upon them by forces the nature of which was not apparent. As before stated, the change of form while under examination was observed on several occasions. This was particularly noticed in the instance of an extremely lengthened oval, the image of which had been projected upon the screen of a photographic camera by Dr. Piffard's friend Dr. J. W. S. Arnold. The oval form was gradually lost, and a circular one assumed, the motion being sufficiently rapid to prevent the reception of a sharp image by the sensitive plate. Photographs of some of the other forms, however, were successfully obtained by Dr. Arnold. In some instances there were concentric rings, the circumference of which maintained a uniform distance from each other, or were in absolute contact. Besides the above were found more or less cutaneous epithelium, epithelial *débris*, and fine molecular or granular matter. No mycelium proper was observed, nor any indication of fructification. From the thin hair-like character of the filaments and the circumstances of their habitat, he suggests the name *Leptothrix vaccinalis* as an appropriate designation. Under the head of "Practical Considerations" Dr. Piffard observes that Impetigo contagiosa, differing as it does in many important particulars from the eruptions with which we are most familiar, has undoubtedly, in many instances occurring after vaccination, been regarded as

syphilitic, to the alarm of the patient, the annoyance of the vaccinator, and the chagrin of the physician who endeavours to remove it by internal medication. On the other hand, its general recognition as a parasitic affection, its trivial importance, and its ready curability by appropriate external applications, will enable us to calm the fears of the patient, to reassure the vaccinator, and to silence one more of the many objections which have been raised against the practice of vaccination by the prejudiced and unthinking. (*New York Medical Journal*, July 1872.)

Formulas for Poultices.—The article "Cataplasm" in the new *Dictionnaire des Sciences Médicales* has been worked up by M. Brochin as completely as possible to the actual state of our knowledge of this ancient method of treatment. Amongst the opinions of authors and the modern modes of compounding cataplasms, M. Brochin cites those of Cayol, Broussais, Réveillé-Parise, and especially Velpeau and Trousseau. The editor of the *Journal de Médecine*, from whom we quote this article, observes that he has had the opportunity of following the last-named illustrious physician for some years, and never heard him order either a bath or a cataplasm; occasionally, however, and with a certain air of solemnity, he would order the poultice. This was made nearly as follows:—

Extract of stramonium, or
 Extract of belladonna;
 Extract of opium;
 Camphor in powder;
 Water. Of each 10 parts. Mix.

A bread poultice having been made, some camphorated alcohol is to be boiled with it; the paste should then be enclosed in a little muslin or tarletan, and the surface watered with the above mixture. It is then to be applied, and covered with some impervious cloth and a large piece of flannel. M. Brochin leaves out the camphor in powder, and replaces it with ten parts of ether. This topical application, which is rather expensive, can be retained in place several days. Trousseau only employed it in grave cases, such as mono-articular arthritis with acute osteitis and puerperal arthritis. He prescribed calomel simultaneously, and insisted on perfect immobility of the limb. The following is a narcotic poultice prescribed by MM. Bouchat and Després:—

Powdered hyoseyamus leaves;
 " conium leaves;
 " belladonna leaves;
 " solanum tuberosum leaves;
 Linseed meal. Of each 20 parts.
 Decoction of poppyheads, q. s.

Conium is also used in poultices specially intended for the relief of superficial cancers :—

Bruised carrots, 500 grains ;
Powdered conium leaves, 30 grains ;
Powdered opium, $\frac{1}{20}$ grain.

The following is intended to act as a diuretic poultice :—

Bruised squill, 100 parts ;
Nitrate of potash, 10 parts.

And this to render the emission of urine less painful :—

Bruised white onions, 6 in number ;
Leaves of parietaria, 50 parts ;
Decoction of marshmallow, q. s.

Both may be applied over the pubis. (*Journal de Médecine*, Oct. 1872.)

Mercurial Treatment of Syphilis.—A discussion took place at the Medical Congress of Lyons at the end of September last, which, from the importance of the subject, the competence of the speakers, and the exclusively practical nature of the arguments advanced, is worthy of attention. The Congress of Lyons shows that syphilographers are divided into three classes—the mercurialists, the non-mercurialists, and the eclecticists. Amongst the first were included MM. de Méric, Pacchiotti, Clerc, Drou, and Rodet; amongst the second, MM. Armand Després and Drysdale; and amongst the third, MM. Diday, Gailleton, and Clément. Experience, it was argued by M. Clément, teaches us that if mercury does not attack syphilis, it at least affects its manifestations to an extent indeed that it may be said to abolish its effects, so that a syphilitic man may procreate perfectly healthy children. To this view many of the speakers were inclined, but considerable difference of opinion existed as to whether mercury should be given to a man who had simply a chancre. M. Diday adduced 74 observations directed to this point. Of these, 25 had been at once submitted to mercurial treatment, whilst 49 only had general treatment during the primary period. Amongst the 25, secondary affections appeared on the average forty-nine days after the appearance of the chancre; whilst in the 49, secondary affections appeared forty-three days after the *début* of the chancre, that is to say six days sooner than the others. The effect of the mercury would therefore appear to be very slight on the secondary action of syphilis. M. Diday, however, further found that in the patients non-mercurialised at the outset, slight secondaries occurred in 34 per cent., and severe in 10 per cent.; whilst in those who had taken mercury during the period of chancre the

ratio of slight cases was only 24 per cent., and of severe 20 per cent. M. Diday concludes that the intensity of syphilis depends less on the treatment adopted at the outset than upon the constitution of the patient and the extent to which the general principles of hygiene have been observed. M. Clerc, who is a strong mercurialist, pointed out various circumstances that in his opinion explain the want of success frequently met with in the use of this remedy. First, it is given in insufficient doses: there is nothing to fear in producing slight stomatitis. Secondly, there are often defects in the mode of administration. Thirdly, hygienic conditions are often neglected: insufficient exercise, the abuse of wine and tobacco, debauchery, often obviate the good effects of a mercurial course. M. Clerc commences the administration of mercury as soon as the chancre appears, because from this date the system is affected. He does not believe or anticipate that it will arrest its development entirely, but he thinks it exerts a material influence in retarding their appearance and reducing their violence. M. Gailleton, a partisan like M. Diday, of the doctrine of *poussées successives obligatoires*, or of successive developments and extensions of the disease, employs the mercury only when secondary symptoms have manifested themselves; there he thinks it stops. M. Rodet (of Lyons) commences the use of mercury at once after the chancre has made its appearance; he pushes the remedy vigorously, and changes the preparation frequently, to get a speedier and more prolonged action. Commencing generally with the bichloride in increasing doses, he exchanges it for a time after the protiodide, and finally, gradually diminishing the quantity of this, replaces it with iodide of potassium. M. Pacchiotti thought that mercurial frictions had been too much neglected; whilst M. Drou alluded to the employment of the method of subcutaneous injections, which he was of opinion might sometimes be advantageously employed instead of other plans. (*Journal de Médecine*, Chaillou and Lucas-Championnière, Nov. 1872.)

Notes and Queries.

DEPARTMENT OF ANALYSIS AND INVENTIONS.

NEW MODE OF PRESERVING SPHYGMOGRAPHIC TRACINGS OF THE PULSE.—Mr. T. B. Anstie, of Devizes, has sent us the following communication :—

“No unprejudiced person who has had practical experience of the use of the sphygmograph can doubt that it can aid us in diagnosis ; its *ready* application is, therefore, a great desideratum. Besides this, the sphygmograph offers one great advantage—that a *visible* record of the state of the circulation is preserved : it is therefore of much consequence that the preservation of this record in an accurate form should be made as easy as possible.

“Having had this subject before my mind for some time past, and believing that tracings on smoked glass give the most delicate and truthful picture of the pulse, I was led to devise a plan for the preservation of the trace thus obtained without the necessity of preserving the fragile and cumbersome glass slides. The result shall be given in as few words as possible : I enclose specimens of the tracings for your inspection.

“Having provided any simple form of press, in which the screw acts on two blocks of wood planed very accurately, so that the compressing surfaces may fit truly, and having padded these surfaces with two or three thicknesses of soft paper, so that the glass slides may not break under pressure, we lay a slip of fine tracing-paper on the lower block, and moisten it with a wet sponge, thoroughly but not too much. The smoked glass bearing the tracing is then put, face downwards, on the wetted paper : the upper block, with its padded side downwards, is then quickly adjusted upon the slide ; and both blocks are put squarely under the press. *Gentle* pressure is then made ; a little practice enables one to give just the slight squeeze necessary to get a good impression. On removing the tracing-paper from the press, we lay it on the table with the impressed side uppermost : we then take a large-sized gummed blank medicine label, wet the gum, and accurately adapt the label to the tracing-paper. We then put

the two under the press, and apply *firm pressure*: a true and permanent record of the tracing is thus obtained. The back of the label also furnishes a convenient place for writing numbers for reference, or short notes of the nature of the case. The tracing can easily be carried in the pocket-book for reference.

"As three or even four impressions can be taken at once, a little practice will render the process both easy and very convenient."

A NEW ANODYNE COLLOID.—Dr. Lackerstein, of Queen Anne Street, has favoured us with a sample and formula of what seems likely to prove a useful application in neuralgic and other localised pains. The composition is as follows:—

R Amyl. hydrid. ʒj.
Collodion (B. P.), ʒj.
Aconitiæ, gr. j.
Veratriæ, gr. vj.

This forms a colloid which should be brushed over the painful part five or six times, forming successive films. If the pain be not at once relieved, the absorption of the alkaloids may be favoured by covering the colloid film with a layer of spongopiline.

We have tried the remedy, with good, though not conclusive, results, in two cases of supra-orbital neuralgia. It certainly seems worthy of extended trials.

Bibliography.¹

Die Diphtherie. Eine Monographie, &c. Pp. 138. Berlin : Hirschwald.

Die locale Behandlung der Krankheiten der Athmungs-Organen. 2^{te} neu bearbeit. u. stark vermerht. Aufl. Berlin : Reimer.

Die offene Wundbehandlung, nach Erfahrungen aus der chirurg. Klinik zu Zürich. Von Dr. R. U. Krönlein. 4to. pp. 139. Zürich : Schabelitz.

Chirurgie der Schussverletzungen. Von Dr. B. Beck. 2^{te} Hälfte. Spec. u. Operativ. Theil. 8vo. pp. 371—923. Freiburg in Br. : Wagner.

Die Elektrotherapie, &c. Von Dr. Moriz Rosenthal. 2^{te} neuarb. u. stark vermerht. Aufl. 8vo. pp. 390. Wien : Braumüller.

The *Medical Record*. Under this title Messrs. Smith and Elder have announced the immediate appearance of a weekly journal, upon the plan of an improved *Centralblatt*, which will consist of short extracts and summaries of new medical papers and books of all countries.

¹ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C. ; Williams & Norgate, of Henrietta Street, Covent Garden, W.C. ; or Baillière, of King William Street, Charing Cross.

THE PRACTITIONER.

FEBRUARY, 1873.

Original Communications.

ON THE USE OF ERGOT IN THE HÆMOPTYSIS OF PHTHISIS.

BY DR. ANSTIE.

I HAVE had the opportunity, in the last (nearly) three years, of testing, more fully than it had previously been in my power to do, the value of ergot of rye as an arrester of hæmorrhage from the lungs in phthisis, and particularly of comparing it with older remedies for the same affection.

In starting upon this inquiry, I considered it desirable to select for comparison with the effects of ergot, some four or five of the remedies for pulmonary hæmorrhage which have enjoyed the most established reputation. Those which I have thus tested are gallic acid, acetate of lead, digitalis, turpentine, and alum.

It is necessary, in the first place, to draw a line of distinction between different groups of cases which were treated; partly in reference to the stage of the disease, and partly with regard to the general temperament of the patient, and especially the condition of his circulation. Accordingly the cases which I have observed may be distributed in three groups:—A will represent the instances of free hæmorrhage occurring in patients who scarcely

exhibited any clear physical signs of phthisis; *B* includes examples of occasional bursts of hæmorrhage occurring in persons exhibiting the signs of consolidation, and possessed of an irritable nervous temperament and quick circulation, but in whom the softening process had not as yet set in; and *C* includes cases in which hæmorrhage occurred in considerable quantity during the softening process, and pretty certainly as a consequence of the opening of large vessels during the lung destruction. I do not, of course, pretend that these classes of cases cover the whole field of phthisical hæmorrhage; they are merely those of which I have obtained sufficient numbers for comparison, and at any rate they typify the more important forms of the affection.

A.—Whether we are justified or not in forming into a special group those cases of phthisis in which considerable hæmorrhage precedes the development of any distinct physical signs, at least it will be allowed that there are a considerable number of patients in whom this order of events is observed, and that they present, on the whole, a tolerably individual set of characteristics. They are for the most part in comparatively good general health at the time of the first hæmorrhage, and they usually possess an active circulation and a somewhat florid complexion; moreover, they are generally of an active nervous temperament. Such patients are probably more numerous among the upper classes than among the poor, in proportion to population; still there are a considerable number of such examples to be met with in the out-patient rooms of hospitals. The danger here is of confounding with true pulmonary hæmoptysis, those cases in which a certain amount of blood-spitting is merely the expression of vicarious menstruation, or proceeds from accidental congestions of the pharynx or posterior nares or tonsils. Care, however, was taken to exclude these sources of fallacy in my observations. The cases observed were seven in number; and of these, four were males and three females.

The first example was a typical case in a young man aged twenty-one, of tall and slight frame, and of decided consumptive family history; he had been working as a gas stoker, and although that occupation might be supposed to be very taxing to his constitution, he had followed it for a considerable

period without feeling ill effects, and indeed was not aware of having ever suffered from illness. The first hæmorrhage happened without warning: he had just come off night duty and was feeling very tired, when he suddenly felt faintish and had a salt taste in his mouth; a hacking cough came on, and then a gush of pure and somewhat bright-coloured blood came from his mouth, to the extent, as he declared, of nearly a table-spoonful. He lay down for some hours, during which the bleeding did not recur; and towards 1 o'clock P.M. came to the Westminster Hospital to present himself as an out-patient. In the passage to the waiting-room he was again attacked with coughing and bleeding, and I saw about four ounces of blood in a gallipot which the porter had lent him. When he appeared in my room he was feeling somewhat faint and ill, with flushed cheeks and a very rapid small pulse. I advised him to come into the hospital, but he refused. I therefore examined and prescribed for him as an out-patient. On stripping him we found the chest apparently well formed and with good expansion; there was nothing abnormal in the breathing, except some jerkiness of inspiration over the upper half of the right lung, and a certain amount of indistinct small bubbling in patches over the same lung. He was ordered to take gallic acid in ten-grain doses every four hours, and to remain on his bed quite motionless until the next out-patient day, with the usual precautions as to diet. In four days he came again to the hospital, and related that he had had no large return of hæmorrhage, but that several times in each day he coughed up quantities of blood varying from a mere spot to a teaspoonful or more of pure blood. The treatment was continued for three days longer, with the addition of ice, which he frequently sucked in small pieces. On his next visit he reported that the hæmorrhage had ceased for the last forty-eight hours; the same treatment was ordered for the next four days. On the next hospital day he reported that the bleeding had returned some hours previously; he looked exceedingly ill, and several times coughed while in my presence, bringing up small quantities of nearly pure blood. I now examined his chest again, and it was pretty obvious there was a considerable amount of blood retained in the tubes, and in fact I afterwards heard that next morning he brought up a

considerable quantity, of very dark colour, feeling much relief to the breathing afterwards. The gallic acid was continued. Four days afterwards he reported that the hæmorrhage was still very troublesome, though never coming in large quantities; he looked haggard, but still had a red flush on each cheek; I again carefully examined his chest, but could detect no further development of physical signs. I now determined to try ergot, and accordingly prescribed forty-minim doses of the liquid extract every four hours. This treatment was followed during eight days, when the patient left it off of his own accord because he had had no recurrence of the hæmorrhage since taking the third dose of the ergot. Two days later he saw me again, and reported this result, remarking that he felt quite well, nor could I persuade him then to undergo any further treatment. This occurred six months ago. I have seen him once since then, when he brought a brother to the hospital; I persuaded him to let me listen to his chest, and detected unequivocal prolonged expiration and dulness on percussion at the right apex, but I could not convince the man that he was at all ill, and have not seen him since.

The second case was that of a young woman, a domestic servant, who had caught a severe cold in scrubbing a stone staircase in a draught; she felt great pain in the chest, and especially a burning soreness at the sternum; the same evening she was attacked with cough and blood-spitting. The next day she applied at the hospital; she told me that she had never had any serious illness before, nor did she know of any consumptive relatives. So marked a flush was present, on one cheek only, that I quite expected to find signs of pneumonia, but on uncovering the chest the slowness of respiration at once made against this idea, nor did percussion or auscultation yield any signs of inflammation. The pulse was very rapid and somewhat soft. In this instance I at once prescribed ergot in the same doses as for the former patient, enjoining entire rest in the horizontal position, spoon diet, and no stimulants. At the next visit, three days later, she said that she had only spat one or two very small quantities of blood, mixed with thin mucus, during the last twenty-four hours. The same medicine was continued, but she did not reappear as a patient until several

weeks later. She then came to the hospital and told me that the hæmorrhage had entirely ceased after her last visit for nearly five weeks, but had recurred on the previous day, in consequence, as she believed, of a strain from carrying a heavy dinner-tray. She had had several attacks of violent coughing almost immediately after this strain, and had been spitting blood all night, being restless with the cough. On this occasion I determined to try gallic acid, and ordered it in ten-grain doses every four hours, with the same general regimen as before. At the next visit, four days later, she reported that the hæmorrhage was now confined to a single spot or two of blood upon awaking each morning. On this day I re-examined the chest, as the girl was looking pale and obviously feeble: signs of consolidation were very evident at the posterior part of the right apex. I may finish the history of this case in a few words. The hæmorrhage scarcely recurred at all after this visit, but the signs of consolidation steadily increased, and at present there are several deposits, not only in the right but also in the left lung, with evidences of softening at the point earliest affected; in short, the case has assumed within the four months from its commencement a type quite unusually bad for hæmorrhagic cases, especially in patients whose families are not phthisically predisposed.

The third is that of a boy of fourteen, remarkably tall and slender, who came as an out-patient with a history of blood-spitting for the last three days, apparently the result of a strain in fast running. It may be doubted if this case could confidently be called phthisical, but the boy's father was certainly consumptive. On inspection there were no physical signs whatever suggesting phthisis, but the boy was suffering from night sweats and had lost much of his muscular power within the last few months. The hæmorrhage consisted of patches of blood mixed with mucus and fine froth, which were spat up after coughing, five or six times a day. The boy was of a florid complexion, very thin, and with a pulse of 100. Examination of the chest revealed absolutely nothing abnormal. Gallic acid was ordered in five-grain doses every three hours, with the usual diet and precautions. At the next visit, three days later, the hæmorrhage was reported decidedly worse; and whilst in the room the boy

several times coughed violently—only once, however, bringing up blood, but then to the extent of nearly a teaspoonful. He was ordered ergot in thirty-minim doses every four hours; and at the next visit, four days afterwards, reported himself quite free for the last two days from blood-spitting. He was put on cod-liver oil, and remained under observation until two months from his first visit, at the end of which time he was examined, and except a very slight dulness on percussion, and prolonged expiration at left apex in front, nothing wrong was detected.

The fourth case was that of a plumber, aged thirty-two, who had never suffered from any symptoms referable to lead, and was otherwise, though not robust, unconscious of having ever been seriously ill till about three months previous to his first visit to me. At this date he began to suffer from sensations of tickling and burning behind the upper part of the sternum, and a hacking cough was set up. About the middle of November 1871, he one morning coughed up a small quantity of bright red blood; there was no recurrence of this till the next morning, when, on waking, he coughed up a small quantity which was dark and clotted, probably a remainder of the first bleeding which had stayed in the bronchial tubes. No further bleeding happened for several days, but he then got an attack of sharp pain beneath the angle of the right scapula, which soon changed into a burning sensation, and about half an hour later he spat up, after coughing, a patch of florid blood mixed with mucus. This occurred some four or five times during the next two days, but then ceased, and he had meantime lost all cough and uneasiness in the chest. Three or four days before he came to me (nine weeks after the first symptoms) he became conscious of a feeling of "tightness" and "heat" across the front of the chest, and soon afterwards the hacking cough set in again. On the morning of his first visit, he had awakened with a sense of relief from the tightness in the chest, but with a strong salt taste in his mouth; and he had scarcely sat up in bed when he gave one violent cough and spat up several successive "splashes" of darkish blood. No recurrence of this up to 1 P.M., when I saw him. The patient had nothing in external appearance to suggest phthisis, but told me that his sister had died consumptive. He was of middle height, and rather strongly built, but his chest was very flat anteriorly

and on both sides seemed to expand very feebly. Pulse 92, resp. 27, face slightly flushed. Prolonged expiration over the upper half of the right, and upper third of the left lung, anteriorly; no noticeable percussion dulness anywhere; no moist sounds. He was at once ordered liquid extract of ergot *℥xl ter die*. The hæmorrhage recurred several times in small quantity during the ensuing three days. On his next visit he looked very ill, had a pulse of 108, respirations 29; the skin seeming hot, the temperature was taken, and found to be 101.8° (at 2.15 P.M.). As he could not be admitted to the hospital, he was sent home and recommended to take 20 minims of turpentine every four hours, keeping constantly recumbent. Whether *post hoc* or *propter hoc* (for he did not complain of the taste of the medicine), he became exceedingly nauseated, turned chilly, and vomited; the hæmorrhage then entirely ceased. He was afterwards under my care for several weeks, taking cod-liver oil with apparent benefit (the temperature became and remained normal), and without any recurrence of the bleeding. His after-history I do not know.

The fifth case was that of a sempstress, aged nineteen, who came to the hospital complaining of acute pain under the left clavicle, cough, and blood-spitting, which had attacked her two days previously. She had always been rather weakly, but had had no important illnesses until she got typhoid fever, about a year before her coming to me. Ever since that she had been ailing, with a sense of general feebleness, but there had been neither cough nor expectoration till about a month before her coming to the hospital, when she got wet through and chilled: this seems to have produced severe bronchial catarrh, but she had hoped she was shaking the latter off. When examined she showed but little excitement of pulse or breathing, but had a hacking cough, and told me that she was spitting blood, in streaks, with almost every cough. Percussion revealed nothing abnormal; auscultation only detected some rather coarse râles posteriorly, on both sides. Ergot, in 40-minim doses of the ext. liq., was ordered every four hours: both cough and hæmorrhage diminished after the first dose or two, and disappeared in less than thirty-six hours. The hæmorrhage did not recur at all for nearly five months; she then applied for relief, saying that the hacking cough and blood-

spitting had again returned, rather worse than before. There were still no physical signs of any permanent mischief in the chest; but the patient had wasted considerably, and complained of night-sweats and almost total loss of appetite. It was now determined to try acetate of lead, which was given in two-grain doses every four hours, the usual precautions as to rest and diet being enforced. This treatment was continued during three weeks, in which time the patient had in many respects singularly improved (*e.g.* in flesh and strength), but the cough and the blood-spitting remained almost as bad as before. The ergot was now prescribed in the same doses as at first: the effect on the bleeding was striking and immediate; after a very few doses it entirely ceased.

The sixth case was that of a married lady (suckling her second child), who was of very fragile and delicate appearance. Two years before she had been recommended to marry (and did marry rather suddenly) in the hope of arresting consumption, the danger of which had been intimated by an acute attack of hæmoptysis. She had not, so far, had any recurrence of the bleeding, and had kept pretty good health on the whole, till the present lactation, which had tried her exceedingly. At the time of her first visit to me she had begun to sweat most copiously, not only at night, but also at least once in the daytime; and the blood-spitting had returned. Pulse 98; resp. 28. Nevertheless, there were but trifling physical signs: scarcely more than a doubtful prolongation of expiration in the left supra-spinous fossa. The hæmoptysis was in bright red streaks after almost every attack of coughing, which was frequent. It was determined to treat her without any change in her circumstances except the administration of ergot in the usual doses; and this proved perfectly successful; the bleeding ceased almost immediately.

The seventh was that of an old woman of sixty-one, with bright black eyes, parchment skin, and a lively, nervous manner. She said that she had seldom ailed at all, and accounted for the bleeding by her having strained herself in some household work: hæmoptysis came on in a sudden gush, after a not very severe fit of coughing. Examination of the chest showed traces, not very marked, of chronic bronchitis and emphysema; there was no

detectable fever. The hæmorrhage stopped after a very few ten-grain doses of gallic acid. This woman's case developed into confirmed and rather rapid phthisis, and will be again cited, later on, with reference to the hæmorrhagic phenomena of the more advanced stages, and the treatment that was adopted for them.

In a further instalment of this paper, I shall relate experiments respecting ergot and other remedies for hæmoptysis occurring in the stages of consolidation, and of breaking down of the lung, respectively; and I shall reserve till the last the analysis of the cases already related, when it will be given in connection with that of the cases which are still to be detailed.

(To be continued.)

A CASE OF RHEUMATIC FEVER WITH HIGH TEMPERATURE SUCCESSFULLY TREATED WITH COLD BATHS.

BY SYDNEY RINGER, M.D.

ELLEN HILLIER, aged 22, was admitted into University College Hospital, Aug. 21, 1872. When four years and a half old she suffered from a severe attack of rheumatic fever, soon followed by a sharp attack of scarlet fever. Since that time she has remained quite well till her present illness, which began about a fortnight before her admission, but she continued at her work till the 18th of August, when severe pain in her knees compelled her to keep her bed.

At the time of her admission she suffered from a rather sharp attack of rheumatic fever; the temperature rising daily to $103^{\circ}5$ Fahr. On August 22, it is recorded in the note-book that she was free from pain, except on movement, when she complained of her knees. The right knee was excessively tender. She complained of pain over her chest. A soft basic systolic murmur and slight friction were heard. The apex sounds were muffled.

To relieve the pains she was ordered laudanum three times a day. On the 24th of August she came under my care. I saw her at 10 A.M. and found her drowsy, with strongly contracted pupils, due to the opium, which was immediately discontinued. Her temperature was $104^{\circ}5$. Fearing from the high temperature, her freedom from pain, and dull listless condition (though it was impossible to tell how far these circumstances were due to the disease or to the opium), that the temperature might become excessive, it was agreed that in the event of the fever rising to 106° a cold bath should be administered. At 4 P.M. the thermometer recorded $105^{\circ}2$ Fahr.; at 11.45 P.M., $105^{\circ}6$; at 12.45

(August 26th), 106°; 1 A.M. (in rectum), 106°·5. At this time she was semi-comatose, delirious, and *sweating profusely*. At 1.20 she was placed in a general bath of 86° Fahr. to which ice was added, so that its temperature was gradually reduced.

Time.	Temp. in rectum.	Pulse.	Respiration.	Temp. of bath.	Remarks.
A. M.					
1.35	104·6	136	22	82	Temperature of room 72° Fahr.
1.50	101·8	123	22	80	
2.5	100·8	120	14	79	Dozed for a minute at a time.
2.20	99	116	20	78	Vomited.
2.22	...	...	...	...	Removed from bath.
2.35	95·2	118	16	...	Temperature taken in mouth.
3	95	110	16	...	
3.15	96·8	114	14	...	" " rectum.
4	96·2 ?	112	12	...	" " axilla.
4.30	98	112	16	...	" " "

After being in the bath ten minutes, she complained of the cold, and when put to bed was rather depressed and chilly, so we covered her with warm blankets and placed hot bottles by her side, and gave her half an ounce of brandy, which she soon vomited. The brandy was repeated in three-quarters of an hour and retained. At 4.30 she vomited some brandy given her a short time before. She felt warm and comfortable. Soon after leaving the bath she fell into a quiet light sleep, which, with occasional remission, continued till half-past five.

It thus appears that a bath of 80° Fahr. in an hour's time reduced the temperature 6°·5, and that the temperature subsequently fell, during the following three-quarters of an hour, 2°·2 Fahr.

Time.	Temp. in axilla.	Pulse.	Respiration.	Remarks.
A. M.				
5	98·4	116	16	Feels very comfortable.
5.30	99·3	118	16	Sleeping.
6	100·4	120	16	Took some tea.
7	102·1	124	16	No perspiration. Feels comfortable.
8	103·7	132	24	No sweating.
8.30	104·8	140	28	
9	105	148	24	

The temperature rising thus rapidly, we determined to employ

the cold bath again. At 9.10 she was again immersed in a general bath of 90° Fahr.

Time.	Temp. in axilla.	Pulse.	Respiration.	Temp. of bath.	Remarks.
9.25	103.4	132	32	84	Temperature taken under tongue.
9.38	102	...	...	75	

At 9.40 she shivered so violently, and the pulse growing very weak and her face becoming livid, we removed her from the bath and gave her a little brandy.

Time.	Temp. in axilla.	Pulse.	Respiration.	Remarks.
9.45	101.2	120	28	Took a cup of tea. Asleep. Skin hot and dry. Asleep. Skin pungent, face flushed. Sweating about face and chest. Three large ice-bags ¹ applied,—one between legs, one over abdomen, and the other over chest.
10	100.8	116	22	
10.15	101	120	24	
10.30	101.3	112	24	
11.15	102.6	124	28	
12.15	103.6	128	28	Blankets removed and sheet substituted. Four ice-bags applied. Taken food freely. Chilly hands and feet. Cold ice-bags removed, and patient covered with blankets. Chilly. Catamenia ceased on 23rd; just re-appeared in small quantity. 8 oz. urine passed at 5 P.M., clear acid, sp. gr. 1012; no albumen. Complains greatly of severe pain down sternum to umbilicus. One-sixth grain of morphia hypodermically injected at 7.45. Sweating about face. Just woke from half-hour's quiet sleep. An ice-bag applied at 8.50, others subsequently applied, and at 9 P.M. a fourth was used. Feels very comfortable. Slept for half an hour. Chilly. Ice-bags removed. Very comfortable.
12.45	103.6	140	32	
P.M.				
1.15	103	128	32	
2	102.2	120	28	
2.30	102.5	112	28	
3	101.8	116	36	
3.30	102	112	32	
4	101	112	28	
4.30	100.8	116	32	
5	100.8	112	24	
5.30	100.6	...	...
6	101.6	...	...
6.20	...	120	...	
6.30	102.2	...	...
7	102.4	124	32	
8	102.8	128	30	
8.30	10	140	24	
9.30	101.7	124	24	
10	100.4	122	20	
11	98.4	112	24	
12	99	116	16	

¹ Chapman's large spinal ice-bags.

The temperature slowly rose during the night, and at 6 A.M. (August 26) reached 102°. During this time she slept quietly. At 5 A.M. she passed a clay-coloured stool. At 6.30 four ice-bags re-applied.

Time.	Temp. in axilla.	Pulse.	Respiration.	Remarks.
Aug. 26				
A.M.				
6.40	102	...	...
7.20	101.6	...	...
8.15	101	...	...
8.45	101	...	...
9.15	100.5	...	...	One ice-bag removed.
9.50	100.8	...	...	Chilly.
10.30	101.2	124	25	Passed loose, copious, clay-coloured stool.
11	100.4	120	28	
12	101	120	28	
1	100.8	120	...	
1.20	101	...	...	Only one ice-bag left on, across abdomen.
2.45	101.2	118	30	Sleeping comfortably.
3.30	101	124	...	Chilly. Pain over sternum less severe than yesterday.
4.30	101.2	112	24	
6.20	101	124	28	Ice-bag removed at patient's urgent request.
7.50	101.6	..	...	Violent pain at epigastrium, making patient groan, unrelieved by hot fomentations with opium; one-sixth grain of morphia hypodermically injected.

At 8.20 she was seized with very severe pain over the front of the right side of the chest, and as at 10.15 the pain continued, another injection, one-sixth grain of morphia, was administered hypodermically. After this she passed a quiet night, sleeping well. The temperature was taken hourly through the night, and varied between 100.5 and 101.4. At 7 A.M. it was 102°. At this time she complained of much pain on swallowing, but was otherwise free from pain. At 7.30 A.M., August 27, one ice-bag was placed over her abdomen and was continued till 3.45 P.M. without any apparent influence on the temperature, when it was removed.

On examining her chest we found marked dulness on the right side below the fifth interspace, and other signs of pneumonia affecting the right lung. Loud double friction was heard over the whole of the heart region. At noon she complained of severe pain in the right shoulder and right side of the chest,

which yielded to hot poultices with laudanum sprinkled on them; but, the pain returning at half-past three, one-sixth of a grain of morphia was again injected. At 10.30 P.M. the temperature rose to 103° , when two ice-bags were applied—one between her legs, the other over the left side of the chest and across her abdomen. At 12 the temperature was $101^{\circ}8$, when the ice-bags were removed, and being restless, she took ten grains of chloral. She however continued restless till 6 A.M., when she fell into a sound sleep. During the night the temperature gradually fell, and at 8 A.M. Aug. 28th, it was only 100° Fahr.

On the 28th she complained of a return of her rheumatic pains in elbows and wrists. Till this time, since the first bath, she had been free from rheumatic pains. On examining her chest we heard loud double pericardial friction over the whole heart region, and detected pneumonia of both bases, but only posteriorly, the pneumonia being proved by dulness, tubular breathing, and crepitation. The temperature was recorded hourly, or every two hours, throughout the day. It remained below $100^{\circ}5$ till noon, when it rose to $101^{\circ}2$, but fell again at 9.30 to $101^{\circ}8$, and steadily fell through the night, and on the following morning at 9 A.M. the thermometer recorded a temperature of $100^{\circ}5$.

On Aug. 29th, throughout the day the temperature rose—at 5 o'clock reaching $102^{\circ}8$ and at 9 o'clock 103° ; but during the night it fell again, till at 3 A.M. it was $100^{\circ}8$, but again rose.

On the 30th the upper line of heart dulness reached to the second rib, and loud pericardial friction was still audible. We also detected the great dulness of back, reaching to the angle of the scapula on the right side, but not quite so high on the left. There was distinct tubular breathing, but no rhonchus, nor expectoration, nor cough. Her respirations were 36 per minute. Subsequently her temperature rose daily to 102° Fahr. till Sept. 7th, and then gradually fell daily till the 11th, after which it became and continued natural. On Sept. 3rd we found considerable pericardial effusion, the dulness reaching to the clavicle, and the friction was much less distinct. There was very little evidence of pneumonia. The effusion diminished by Sept. 5th, the cardiac dulness only reaching the second rib. She

suffered from slight rheumatic pains in many of her joints till Sept. 15th. She was discharged Oct. 12th, cured.

It will be seen that this case confirms Dr. Fox's conclusions from his carefully recorded cases, that the temperature falls some time after removal from the bath. It also shows the marked effect of ice-bags, though it was probably greater in this case than many others, owing to the woman being small and spare. It also shows that pericarditis does not contra-indicate this treatment, and that when it increases the pericarditis and produces double pneumonia, yet the patient may recover. The pneumonia in this case was certainly peculiar, and appears to me allied rather to hypostatic than to ordinary lobar pneumonia. Thus the dulness ran along the back of the lung, leaving the anterior part but little affected. It excited no cough, produced no expectoration, hurried the breathing but very little, and did not heighten the temperature.

My experience of these cases leads me to conclude that the indications of approaching hyperpyrexia are delirium, high temperature, and disappearance of joint pain, though no doubt this combination not uncommonly occurs without an excessive elevation of the temperature, and, taken singly, each of these phenomena is of little value. For we meet with cases accompanied by high fever and very little pain, which nevertheless proceed satisfactorily. This is notably the case with children, in whom, as is well known, the joint affection is often extremely slight, whilst the fever is high. Again, the mere subsidence of the pain without a diminution of the fever does not threaten hyperpyrexia, as in many cases by mere rest the joint affection almost disappears, although the temperature may not abate. Again, we occasionally meet with cases at first puzzling, where there is persistent fever for days, even weeks, without joint and heart mischief, when perhaps pericarditis, soon followed by joint affection, declares the nature of the case. Neither does a high temperature predict an attack of hyperpyrexia, for these attacks not uncommonly occur in mild or only moderately severe cases. Indeed, as I have shown some years back, an attack of hyperpyrexia may occur without any of the indications mentioned, for a girl who recovered from rheumatic fever, and was to leave the hospital in a few hours, became suddenly

unconscious, and her temperature was found to be 110° , and continued as high till her death a few hours after.

Dr. Fox thinks suppression of perspiration is a serious symptom, and is a sign of impending danger. My experience, however, does not confirm this statement. The patient whose case has just been described, perspired freely before her attack. On the other hand, we meet with cases where sweating ceases without a decline of the other symptoms, and yet hyperpyrexia does not supervene. Again, it often happens that patients whose skin remains dry throughout the attack, progress favourably. This is notably the case with children, who, as a rule, perspire much less with rheumatic fever than adults. I beg, in conclusion, to draw attention to another circumstance, probably well known to most doctors, but not sufficiently dwelt on, namely, the influence of age on rheumatism. I am not referring to the fact that children generally have very little joint affection although the fever is high, nor to their greater liability to heart affection than adults, but to the influence of age on the duration of rheumatic fever. In children under ten years of age this disease seldom lasts longer than ten or twelve days, and often declines in six or eight, even when the patient is untreated; and we rarely if ever meet with chronic cases, such as occasionally occur in young adults, and which are common in middle-aged people, where the fever continues forty, fifty, sixty, or more days, the fever sometimes continuing high (103°) throughout, or is high at the commencement and then falls and remains between 100° and 101° for a considerable time, accompanied sometimes with severe, but often with very slight, joint pain, so that the patient gets up daily and is able to do a little work. In some cases we meet with a temperature which rises to 101° for a week or ten days, then becomes natural for a few days, and then rises again; these variations being repeated over and over again.

The treatment of this case was conducted by Messrs. Rigden, Curtis, and Taylor, to whose careful attention this woman undoubtedly owes her life.

CASES ILLUSTRATING THE EMPLOYMENT OF CENTRAL GALVANISATION IN VARIOUS SENSORY DISTURBANCES.

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THE influence of the constant galvanic current in relieving pain, and often permanently arresting it, in the district of a single nerve or the distribution of a plexus, is by this time well established, although the conditions which affect its success or failure must be allowed to be still undetermined. The evidence respecting the effects of galvanisation of the great nervous centres themselves, and the sympathetic system, is less satisfactory, and it is very desirable that observations made in this direction should be recorded, even though no very striking results in the way of success or failure present themselves. At the present moment there is something like a rage for the employment of the constant current, and some danger therefore that an exaggerated estimate of its powers may be followed by a reaction which would threaten the absolute neglect of a very valuable therapeutic agent. I have been trying central galvanisation lately in a number of anomalous conditions of the sensory organs, as well as in cases of well-marked neuralgia, with a varying result. Out of these cases I propose to cull a few which appear the most interesting, or about which I am in a position to give the most accurate information. The difficulty of following up treatment amongst hospital out-patients is well known, and this has reduced considerably the number of observations in this direction which I might otherwise have been able to bring forward.

CASE I.—A man, aged 68, had suffered for one year from pain limited to the region of the two upper divisions of the fifth nerve, left side. The pain was constant, but terribly increased besides by movement in walking, or even driving, or by a current of air. There was also such intense hyperæsthesia of the skin that he could bear nothing to touch this side of his face, which was consequently left unwashed and very dirty. He could not even bear the bed-clothes upon it.

The constant current from five cells Daniell-Muirhead—the negative pole to the painful region, and the positive to the nape of neck—was applied once during three minutes. He was then from circumstances unable to attend the hospital for three months, when he appeared again, still suffering as described. The current was now applied regularly twice a day in the manner just noted, with a gradual improvement. After six weeks the pain had ceased to be constant, although it still attacked him at intervals, but the hyperæsthesia of the skin was entirely cured. I could touch roughly any part of the affected region.

I would just add here, that although I have not found any marked benefit from galvanism in ordinary toothache, yet for the scarcely less wearisome aching which remains, often for hours, after the extraction of a tooth, the constant current is of extraordinary value. It will generally stop this effectually at once.

CASE II.—A single woman, aged 42, who had been epileptic from 17 to 35 years of age, applied with violent pain in both parietal regions, occasional loss of memory, and fears about retaining her reason. There was a history of struma in early life, and later a good deal of mental trouble. K Br was useful at first, and then failed to relieve her, as did opiates and chloride of ammonium. The pain was intense, coupled with vertigo, tinnitus aurium, flushing of face, besides occasional stammering and subjective sensation of "people talking." She then had the constant current from eight cells Stöhrer through the temples, and also with the positive pole on the neck, the negative on the painful part, two minutes in each direction.

During the application the pain left her. Three times in each week this treatment, without drugs, was continued for six weeks. Sometimes the pain would return as soon as she had

quitted the electrical room, at others it would leave her for a few hours. On the whole, however, she improved: her memory was clearer, she lost some of her discomforts, and became more cheerful. But this did not last, and at the end of this time it was pretty evident that she was in very much the same state as at first. I therefore stopped the galvanism and gave her arsenic, which immediately relieved her much more than anything which had been done.

These were cases of neuralgia. In the following, the nature of which is rather obscure, the symptoms may possibly depend upon an intra-cranial tumour.

CASE III.—A single woman, aged 33, who had previously suffered during three winters from facial neuralgia, whilst running one day, got giddy, and fell down in the street without losing her senses. A few days afterwards she had a similar attack, which recurred for weeks every three or four days, and then gradually the giddiness became constant, and had been so for two years before her application at the hospital. For three months the right hand, and in a less degree the right leg, had been losing power and felt always cold. On admission her grasp was somewhat defective on this side, and she slightly dragged the right leg. There was a doubtful want of symmetry in face. The giddiness only attacked her when she moved, or when there was much noise. There was a neurotic family history. KI and K Br and iron did her no good. The constant current (five cells Daniell-Muirhead, increased to ten) was then applied between nape of neck (+ pole) and forehead (— pole) for three minutes. She found improvement after the first application, and when the treatment had been pursued daily for ten days she was unmistakably much better, scarcely suffering at all from giddiness, and greatly improved in appearance. She told me that the first effect of the application was to cause giddiness, which passed away and left her feeling much stronger and brighter. The galvanism was continued, but the improvement did not persist after a month, and at the end of six weeks all treatment was omitted for ten days. During these ten days she assured me that her head was much worse than it had been when the galvanism was being applied. I now gave her large doses of chloride of ammonium, and for a week

whilst taking them she felt better than when under electrical treatment.

CASE IV.—A single woman, aged 22, who, as an infant, had worn instruments for a "spinal affection," applied on account of anomalous sensations which prevented her earning her livelihood as a domestic servant. It seemed that eighteen months previously she had felt a numbness in the fingers of the right hand, followed by a similar sensation in the right foot and then in the left hand. This numbness had persisted, and at the time of her application she complained besides of inability to hold a needle or pick up small objects. The grasp of each hand was feeble. A touch upon the backs of the fingers caused a tingling up the arms. The fingers felt to her as though swollen. She could sweep, and do rough work generally, but failed with anything delicate. She seemed to walk well. She was admitted and treated with quinine and K Br. At the end of three weeks the condition of her hands remained the same.

The constant current was then applied—the positive pole to the upper cervical spines, the negative placed with the hands in water—for ten minutes daily. After a month of this treatment, I find in my notes: "Right hand feels stronger, but any improvement is slow. Still she does more than when she came in." After another month of galvanism there was again some further improvement, but she still held a pen very clumsily, and could not feel it between her thumb and fingers. She remains under treatment, and I cannot feel sure that she has derived very much benefit from this trial. I expect better results from the use of Faradism, which will now be employed.

CASE V.—A pale, sickly-looking lad, aged 20, applied, complaining of a "stiff" pain over his head, and a desponding feeling. There was no history of inherited neurosis, but he confessed that he had been greatly addicted to self-abuse. The pain, which was constant, but at times more or less severe, was at the top of the head, was not increased by pressure, and was accompanied occasionally by a cold sensation as of trickling water both in its neighbourhood and at the nape of the neck. The pain was sometimes worse at night. No giddiness, vomiting, nor nausea. At times he had been troubled with noise in the ears and specks before the eyes. Three years previously he had

suffered from what he called "a melancholy feeling" in his forehead, and an unsettled condition of mind, but the pain in the vertex only dated from one year past. A week before his application, when in a hot room, he felt much exhausted and fainted, losing his senses for a few minutes. He denied ever having had syphilis. His appetite was middling, and his sleep unrefreshing. He complained of frequent nocturnal emissions.

He was ordered the application of the constant current to the head three times a week. The rheophores were applied in turn to the forehead and nape of neck, and then to the temples. This treatment was continued during three weeks, at the end of which time he remained as nearly as possible in the state described at first. He reported that after each application of the electricity the pain was not quite so bad, but the amelioration only lasted about a quarter of an hour. There was no change in the frequency of the seminal discharges.

This is a case in which iron or arsenic, with cod-liver oil and perhaps strychnia, will probably, when they come to be employed, prove of much greater service than the constant current.

CASE VI.—A gentleman, aged 50, who had suffered from syphilis twice—the first time twenty-nine years, the second time nine years, before I saw him—came under my care with symptoms which seemed referable to tertiary manifestations of this disease. Prominent amongst these were pains in the spinal column and along the course of many of the spinal nerves. The pains were constant, increased by exertion, and intensified at a certain few spots only by deep pressure upon the ribs. Light pressure upon the skin did not affect them. He informed me that a severe pain which on one occasion had seized him in the right frontal bone, extending to the eye and accompanied by diplopia, after resisting other treatment for three weeks, was immediately cured by iodide of potassium. The diplopia, however, still persisted. For the spinal pains described, with which was associated a sense of waist constriction, he took, under my advice, long courses of iodide and occasionally mercury, but without any relief to his suffering. And I may add generally, that the resources of the *Pharmacopœia* were exhausted in endeavours towards this object, always without effect in relieving his pain, although under specific treatment he lost the diplopia,

and an enfeebled condition of his bladder, which at first had been very marked.

Here was a case, then, in which almost uncomplicated pain was the symptom to be relieved, and apparently a very proper case for the employment of the constant current, at least as a palliative agent. At two different stages this was used for two weeks at a time. As a rule the positive pole was applied to the cervical spines, and the negative to various painful districts in turn, but sometimes this arrangement was reversed.

The smarting of skin produced (especially at the negative pole) was complained of a good deal, and this was most notable at the points which showed most tenderness on deep manual pressure. On several occasions I adopted a plan which is frequently pursued by my colleague Dr. Radcliffe. I insulated the patient and, together with him, a Foveaux battery by means of glass insulators. A strap carrying a wetted sponge, connected metallically with the platina side of the battery, was buckled to the patient's neck, so that the sponge was closely applied to the mid-cervical spines. By means of a similar strap another sponge connected with the zinc side of the battery was applied to the lowest part of the spinal column. To this, in addition, a separate copper wire was attached, and then fastened by its other end to a leaden water-pipe in an adjacent room, forming thus an earth-wire. By this means it is thought that the negative pole is removed to an indefinite distance, and the patient brought thereby under the influence of positive electricity, with which he becomes charged. Neither of these modes of application produced any but the very slightest alleviation of pain, and that only for a very few minutes following the operation. It is unnecessary to add therefore that no advantage resulted to the patient. So far as I have seen in the employment of the constant current for the relief of pain, there is no reason to expect a future benefit if it fail during the time of its application to afford some considerable solace.

CASE VII.—A single woman, aged 29, had suffered at the time of her application at the hospital, for two and a half years, from severe pain in the head, as often on one side as on the other. Her appearance was striking from the hair of her head being throughout completely grey, the change in colour

having commenced when she was seventeen years of age. She had, as might have been expected, a neurotic family history, which is worth giving in detail. One of her sisters, it seems, turned grey at twenty-one, and died at forty-seven of "epilepsy." Another sister died between thirty and forty years of age of consumption, and "*her* mouth," the patient said, "was drawn to one side." A third sister is still living, thirty-four years of age, and not at all grey. Six of her brothers died in childhood—one suddenly at seven years of age, one soon after birth, and the others either of zymotic diseases or from some cause which she could not remember. Her mother, still living, seventy-six years of age, suffered during the last two winters from neuralgia. Her father died of dropsy, after rheumatic gout and drinking.

She herself was in good health till four or five years ago, when she became subject to violent headache, which for the last two and a half years had never entirely left her.

The occipito-parietal region of the head was indicated as the chief seat of the pain, which attacked sometimes one side and sometimes the other, and the corresponding arm was described as feeling numb and wanting power during the exacerbations. Digital pressure upon the occipital bone and in the neighbourhood of each parietal eminence made her flinch very much. There was nothing in her other organs to call for remark.

Chloride of ammonium, iron, and quinine were severally administered without good result, but were often vomited. Chloroform and belladonna were also applied locally without relief. For three weeks she was injected subcutaneously with morphia ($\frac{1}{8}$ grain), and with considerable temporary relief, the effect lasting more or less for twenty-four hours. The injection made her quite stupid for several hours, and she slept well during the night following, her ordinary habit being to be woke up repeatedly by the pain. Altogether, she said, she had never been so easy as under this treatment.

The constant current, derived from twenty to twenty-five cells of Daniell-Muirhead battery, was then employed, the positive rheophore being applied to the nape of the neck, and the negative to the tender points in turn, the application to each lasting two minutes. Then a rheophore being placed on each temple, a current of like strength was passed for two minutes. This treatment

was continued three times a week for three weeks. The patient reported that during the application of the current she entirely ceased to feel the pain, and that generally for two or three hours afterwards there was considerable ease. The alleviation, however, did not last nearly so long as that produced by the morphia injection. A trial was then made of a proceeding which is termed galvanisation of the sympathetic. One of the rheophores (a small metallic dish covered with wetted leather) was held firmly in the right auriculo-maxillary fossa, and the other applied to the side of the lower cervical vertebræ, and a current from fifteen cells of Daniell-Muirhead battery allowed to pass during five minutes. This treatment has now been continued for ten weeks, the current being thus applied from three to six times a week. She says that during its application she feels very bad, and as if she were going to die, the sensation being very much worse than that produced by the other electrical treatment. The giddiness persists for half an hour, but there is no faintness. The resulting ease, however, lasts far longer than that which followed the former process, often continuing until the next day. At times she has been a good deal better, and altogether it is certain that she has not had such violent attacks as formerly. On the other hand, she cannot think the relief is permanent, for if she goes a little longer than usual without the treatment the pain becomes severe. I have now ordered the application to be used to each side of the neck in turn at every sitting.

The process of galvanisation just described, it is right to mention, is sometimes attended with more unpleasant results than those which this woman described. Some years ago I was attending a gentleman, aged 46, who suffered from epileptoid attacks and a variety of nervous sensations. On one occasion I applied this process to him, employing, however, a much more feeble current—that derived from five cells of Foveaux's battery. I noted before commencing that his pulse numbered 78, and was steady and good. He described himself as feeling better than usual. The application had only been continued during two minutes when he changed countenance, complained of feeling faint, of a tightness about the brain, difficulty of breathing, and feeling of sickness. There was an imitation, in fact, of the feeling which preceded his attacks. I observed

that his pulse had lost force and beat more slowly, that his face was pale, and his pupils widely dilated. With the aid of a stimulant he gradually revived sufficiently to leave my house. He did not come again.

I think it is difficult to feel convinced as yet that the process described is really a galvanisation of the sympathetic. It must be remembered that the rheophore, when planted in the auriculo-maxillary fossa, is in the immediate neighbourhood of several important nerves, and indeed is nearer to them than to the superior cervical ganglion. That there is always a considerable diffusion of electricity from the spot to which a rheophore is applied, there can be no doubt. I have frequently observed, for example, that in attempting to galvanise the anterior tibial muscles of the leg in a case of infantile paralysis, the current has been conveyed to the muscles of the calf or the outside of the leg, and caused them to contract. It is impossible to conceive, therefore, that the numerous nerves which are to be found just below and about the temporo-maxillary articulation can escape at least some of the influence of the current when applied to this region. The important experiments of Brown-Séquard have shown us that galvanisation of the sympathetic in the neck causes contraction in the walls of the arteries supplied by its branches. Now, branches from the superior cervical ganglion proceed to the internal carotid, forming the carotid and cavernous plexuses and following the vessels as they branch to their distribution. One of these ultimate branches, the central artery of the retina, is, thanks to the ophthalmoscope, within our ken. If the process described be a true galvanisation of the sympathetic, we might expect to see, during its application, some alteration in the size or colour of this branch. On one occasion I got Dr. Tibbits, our electrician, to apply the process to the woman whose case I have above related, whilst I carefully watched the fundus oculi of the same side with the ophthalmoscope, employing the direct image as being the largest and in all respects the most favourable for this observation. The woman had a large pupil, and the view obtained was exceedingly distinct. There was certainly no change whatever to be observed in the size or colour of the artery during the passage of the current, nor after its withdrawal. In the case last described it

therefore seems at least as likely, I think, that the unpleasant effects upon the patient were produced by accidental galvanisation of the pneumo-gastric as that the sympathetic ganglion was acted upon. It will be remembered that in 1846 it was shown by the brothers Weber that galvanisation of the pneumogastrics in the neck caused the pulsations of the heart to become slower, and, if applied in sufficient strength, arrested its action altogether. So, again, it is conceivable that in the woman's case the relief she experiences may be owing to galvanisation of the auriculo-temporal nerve, and possibly a thence reflected influence upon other branches of the fifth, for the rheophore is at least as near to this trunk as to the superior cervical ganglion.

THE INFLUENCE OF THE NERVES ON NUTRITION.¹

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PART I.

WHEN we reflect upon the great development attained by the nervous system in all the higher forms of animal life, its extensive distribution, its intimate connection with the anatomical elements, and close relations with the functional activity of the various organs of the body, it is not surprising that it should be found to exert a powerful influence on their nutrition.

We know that by an act of the will, or by the application of stimuli to certain nerves, we can cause muscular tissue to contract, and that the energy and persistence of the muscular contraction induced by such irritation can be modified by differences in the kind and mode of application of the stimulus.

In like manner by irritating other special nerves we can influence the amount and the quality of the secretion poured forth by many glands.

Now it may be said that, in the case of the muscles, during all active performance of function there is disintegration of their substance, the waste of which must be supplied in order that the tissue may preserve its integrity and capacity for further functional activity, and consequently that by its power of calling the muscles into play, the nervous system can exert a direct influence on their nutrition.

¹ The Editor wishes to explain, to those who may be surprised at the insertion of a physiological paper, that he intends this as a first step in the discussion of a question most important for the progress of therapeutics, viz. the possibility or impossibility of artificially modifying nutrition of diseased organs by acting on the nervous system.

The same argument applies still more strongly to the secretory organs, for the experiments of Ludwig have shown that the salivary secretion can be excited by the direct action of the nerves, even when all circulation through the gland has stopped. Excitation of the chorda tympani can induce a flow of saliva from Wharton's duct, after the artery has been tied, or even when the submaxillary gland has been entirely removed from the body. Ludwig from hence concluded that we ought to admit besides vaso-motor fibres, other special fibres acting directly on secretion; and Pflüger, in an essay which I have recently translated, believes he has been able to demonstrate the connection of such nerves with the gland cells themselves. In one sense, then, all must agree in admitting the presence of trophic nerves; but it has been well pointed out by Onimus, that those who hold this doctrine most strongly have confused the distinction which must exist between the chemical phenomena that accompany nutrition, and those which occur during the active performance of function.

The distinction between these two may be demonstrated easily enough. Muscular tissue, as is well known, contains a large percentage of nitrogen. Its nutrition is effected by the albuminoid substances of which it is composed breaking up into secondary compounds of a more soluble nature, such as sarkin, creatine, creatinine, and the rest. These in part are discharged as such with the urine, and in part undergo conversion into urea, itself a highly nitrogenised compound. The place of the disintegrated material is taken by fresh albuminous compounds abstracted from the blood. The amount of urea and of the above-mentioned nitrogenous compound eliminated from the body is in part, though not exclusively, a measure of the waste of muscular tissue. I say in part, because surplus albuminous matters in the blood appear to undergo the same metamorphoses till urea, the lowest and most dialysable compound, is reached. From this it would appear to be a legitimate conclusion, that if during contraction the disintegration of muscular tissue were increased, there should be an increase in the amount of urea eliminated. The careful experiments of Fick and Wislicenus, Parkes, Frankland, and others appear, however, to show that if the quantity of urea is to be the measure of change, the wear and tear of muscular tissue

during violent exertion is but slightly greater than during absolute rest; for after severe walking exercise little or no more urea is discharged than during quiescence on the same food. On the other hand, the experiments of Edw. Smith, and many others, show indisputably that the slightest muscular efforts are accompanied by the production of an increased elimination of carbonic acid, which is apparently derived from the disintegration of the hydrocarbonaceous compounds, sugar and the like, contained in the blood traversing the capillaries of the muscle. The muscles, therefore, must be regarded as essentially constituting an apparatus by which the force generated or set free by oxidation of certain constituents of the blood is utilised; and we can further understand how the materials required for the nutrition of their proper tissue, which appears to be a nearly constant quantity, are quite distinct from those required for the performance of their function, which is liable to great variation. The same probably holds good in the case of the organs of secretion. It is not the gland substance which undergoes disintegration and requires renewal when the gland is actively performing its function, but it is the constituents of the blood traversing the gland during its excitation, and demanded for the production of the special secretion, that are taxed.

No doubt the increased flow of blood that takes place through the muscle or gland for the purpose of supplying the functional demands, if I may call them so, of the organ, increases all the molecular changes that minister to nutrition; and it is in this secondary or subsidiary action that I think we may see the explanation of the slight increase in the excretions of nitrogen which has been noticed during and after work, and also of that slow but steady and sure augmentation in size and weight, which we call hypertrophy, that occurs in all organs when much used, providing the supply of blood is commensurate with the demand.

We see then that nutritive, must be distinguished from functional activity. It is the object of this paper to discuss the question, whether the influence of the nervous system upon the process of nutrition is direct or indirect; in other words, whether there are nerve-centres which transmit a force or energy to the several tissues by which the molecular changes constituting nutrition are accelerated or retarded, or whether the activity

of the nutritive processes is modified indirectly by the action of the nerves on the blood-vessels.

The evidence I shall have to adduce on this point is of the most contradictory nature, clearly showing the necessity for further investigation, and rendering it impossible at present to arrive at any positive conclusions. At the same time it affords a good field for discussion on a subject that must be acknowledged on all hands to have important bearings, not only on physiology, but upon pathology, and the principles of treatment of various diseases.

The term nerves of nutrition, or nutritive nerves, appears to have been used for the first time by Auguste Comte in 1854, in his "*Politique Positive*," where the following sentence occurs. Speaking of the brain, he says: "Besides this general influence, the cerebral centre is especially connected to the body at large by the special nerves of nutrition. They hold towards it, though in a less marked degree, an office or duty of maintenance analogous to that of the motor nerves towards the muscular functions." Again, in a letter to D'Audiffrent, written in 1857 and published in 1862, Auguste Comte observes: "There are only three classes of nerves—the trophic or nutritive, the sensory, and the motor—which constitute so many systems respectively subordinate to the three regions of the brain."

Samuel, in 1860, published a work entitled "*The Trophic Nerves*." The existence of such nerves he based on the results of his experiments, and upon pathological evidence.

He thought that these trophic nerves took their origin in the ganglia on the posterior roots of the spinal nerves, and that, running centrifugally, they were distributed to the tissues; when these nerves were *irritated*, they induced increased activity of all the nutritive changes, the tissues swelled, and cells were formed with abnormal rapidity.

On the contrary, paralysis of these nerves occasioned diminution of the nutritive operations and atrophy. To demonstrate these facts, he passed rough fragments of bone beneath the sciatic or the crural nerve, which was thus stretched over them like a cord, and the bones were sometimes dipped in croton oil to render them more irritating. In such animals he found on the second, or even on the first day, swelling of the

thigh, leg, and foot, which attained an immense size on the third day. The sensibility as well as the temperature of the limb became greatly increased, and an ill-smelling discharge took place from the wound. No animal lived longer than four days, and some died at the end of two days.

Corresponding experiments were instituted, in which the nerve was not exposed to irritation, though the tissues were. In these cases the thigh swelled; there was also some tumefaction of the upper third of the leg, but the rest of the leg and foot remained natural, and healthy pus was secreted by the wound. Death rarely occurred before the end of a week.

So again he produced laryngitis by irritation of one or two of the four laryngeal nerves by means of powerful electrical currents. Often in the course of thirty hours the respiration became embarrassed and wheezing, and there was an abundant discharge from the nose and mouth. On dissection the mucous membrane was found swollen and reddened, as were also the vocal cords, whilst the bronchi and lungs were normal. The larynx seemed to be chiefly trophically innervated from the superior laryngeal nerve, the trachea from the inferior laryngeal nerves.

In other instances, he irritated the vagi just below their exit from the skull, and obtained the symptoms and anatomical characters of pneumonia.

In the next place Samuel stimulated the spinal cord by passing a bristle dipped in croton oil through it, and when this was done opposite the last dorsal vertebra, and so as to affect the posterior roots and spinal ganglia, he observed great hyperæmia, tumefaction, and elevation of temperature in the lower limbs, but these symptoms did not occur if the ganglia and posterior roots were missed.

He further maintained that *paralysis* of the trophic nerves induces *atrophy*, though since these nerves run with others it is impossible to isolate and divide them separately in experiments on animals; but he regarded the pathological condition of *atrophia circumscripta totalis* as an instance of it in which all the tissues are affected.

According to Samuel, again, certain nerves contain trophic fibres whilst others do not; thus persistent electrical, chemical,

or mechanical irritation of the two auricular nerves distributed to the ear of the rabbit was absolutely without influence on its nutrition, though a very remarkable influence of this kind was exerted by irritation of the auriculo-temporal of the fifth. The effects were most marked when a galvanic current was transmitted through the latter where it crosses the facial vein. Under these circumstances slight conjunctivitis occurred, which the next day had developed into strong blennorrhœa, though without any disease of the cornea. A few days after the operation, violent inflammation set in over the whole ear. The temperature rose several degrees, the connective tissue swelled up to three or four times its normal thickness. The colour of the ear deepened to cherry red, extensive suppuration followed; the epidermis and the hair fell off; the skin became extremely tender, and after lingering a few days the animal died.

A very interesting point was, however, that a day or two after the inflammation had been established in the one ear, the opposite one also became inflamed, and some conjunctivitis was established, though both symptoms were much slighter on the sound side than on the side operated on.

This he explains as being a result of a connection of the ganglionic cells supplying the two parts, and considers that it demonstrates the existence of centripetally running trophic fibres.

Now, it must be admitted at once that there are many facts which seem to support the views of Samuel. I place at the head of these one that must be familiar to all, namely, that given by Sir James Paget in his *Lectures on Nutrition*, as related to him by Mr. Hilton, in which the median nerve was compressed by the callus thrown out to repair a fractured radius. The patient suffered from ulceration of the thumb and of the fore and middle fingers, which had resisted various treatment, and was cured only by so binding the wrist that, the parts on the palmar aspect being relaxed, the pressure on the nerve was removed. So long as this was done the ulcers became and remained well, but as soon as the man was allowed to use his hand the pressure on the nerve was renewed, and the ulceration of the parts supplied by it returned. Somewhat similar cases are given by M. Gillette in the volume just published of the "*Dictionnaire Encyclopédique*." In one the median nerve was

divided, and ulcerations followed on the palmar surface of the middle finger, and upon the dorsal surface of the terminal phalanx of the index finger, causing loss of the nail. M. Gillette also saw a case under the care of Broca, where the division of the median nerve was complete : the wound cicatrised, and the hand had partially recovered its sensibility, when a phlyctenula appeared on the pulp of the middle finger, which, bursting, left a large ulcer.

In the early part of last year M. Hayem presented to the Society of Biology, in Paris, a patient who had received an injury across the fore-arm, implicating the median nerve. This patient presented the symptoms of partial paralysis of motion and sensation affecting the thumb, index and middle fingers, and further certain trophic alterations consisting in the progressive atrophy of the extremities of the fingers, and the appearance of successive ulcers at these points preceded by phlyctenulæ.

M. Charcot has recorded a very similar case in Brown-Séquard's "*Archives de Physiologie*."

Take, again, a case recorded by Mr. F'Anson (*Lancet*, vol. ii. 1871, p. 913). A man pierced the annular ligament of one hand with a sharp instrument; profuse hæmorrhage occurred, soon followed by numbness, stiffness, and inability to flex the fingers supplied by the median. After two days the wound united by the first intention; and from this time to the middle of the following month, a period of about twenty-eight days, numerous vesicles formed on the fingers, followed by hard circumscribed *black* patches. He now went to work for a month, when the sleepy feeling returned, pain was felt at the old cicatrix, the temperature of the thumb and fingers fell, and bullæ again began to form principally on the fore and middle fingers, the interspaces being *white* and *bloodless*. On pressing the thumb and finger nails the return of blood was very slow, showing diminution of supply. On the next day, two months after the accident, gangrene appeared; and in the fore-finger a line of demarcation formed across the first and second phalanges. Amputation was performed, and the wound united by the first intention.

Laborde and Leven (*Gaz. Méd.* 1870) have described various changes in nutrition as occurring in guinea-pigs and rabbits from section of the sciatic nerves. The skin, they say, becomes

dry, pale, and easily separable; ulcerations make their appearance in it; the hair becomes friable and falls out, the nails or claws easily break down, the bones become exposed, and dry necrosis takes place in them. The blood-vessels are disposed to spontaneous hæmorrhages, and, if cut across, bleed severely in consequence of fatty degeneration of their walls. On the other hand, cicatrization and healing of these trophic disturbances began immediately after the recovery of sensibility and of the resumption of their functions by the nervous and muscular tissues.

I find also that in Vulpian's experiments¹ section of the sciatic was followed, in addition to the atrophy of the muscles, in one case (rabbit) by a very voluminous white swelling of the corresponding tibio-tarsal articulation with ulceration of the skin over the calcaneum; and after death, considerable swelling of the popliteal lymphatic gland was found.

In another instance there were cedema and a tendency to sphacelus. In another, a large abscess, existing before the operation and above its level, made rapid progress. In another (a dog), the dorsal surface of the toes became ulcerated, but this was apparently owing to the pressure of the animal upon it.

That the affection of a sensory nerve may, by a kind of reflex action, affect the nutrition of the whole body, thus supporting Samuel's idea of centripetally running trophic nerves, seems to be shown by the following case recorded by Dr. Packard (*Amer. Journ. Med. Science*, April 1870), which is extremely instructive, and constitutes a type of a whole class of such affections.

A girl, eleven years of age, was brought to Dr. Packard with a large splinter of wood under the ulnar side of her right thumb-nail, which had entered three days previously. Poultices had been applied, and pus was beginning to form. Dr. Packard at once etherised her and removed the splinter, making also an incision in the pulp of the thumb to afford an exit to the pus. Great relief followed, and the wounds healed kindly, although the swelling was slow in subsiding.

Three months after the child was again brought to him, suffering under very grave general symptoms of nervous irritation. She had choreic movements of the whole body, of all the limbs,

¹ Brown-Séquard, 1872, p. 384.

and of the jaw, the right half of her person being somewhat more affected than the left. She had lost flesh and strength, was peevish, irritable, and unable to fix her attention on anything. Her appetite was bad. Locally, there was sensitiveness of the affected thumb, which she could not use in grasping, writing, or sewing. Iron, quinine, and arsenic were ordered as general remedies; the thumb was protected by a plaster containing opium and belladonna; and she was sent to the sea-side. Some improvement took place, but the choreic movements continued with undiminished intensity, and on her return she again began to lose condition; and now, as there seemed to be one point of special sensitiveness at the ulnar edge of the thumb-nail, exsection of the nerve filament involved was determined upon. This was done. In a few days the child was noticed to be steadier; she gained in flesh and strength, and in two months was perfectly well.

In other instances the reflex paralysis appears to be of a more local nature.

Such a case is recorded by Dr. Harrison Allen, in the *Amer. Journ. Med. Science* (April 1870, p. 411), of which I again give the heads, as it appears to be a type of many others. In a hotly contested action in 1864 a cavalry captain received a pistol wound which entered the left side of the neck, one inch above the clavicle, a little to the outer side of the sterno-cleido mastoideus, and lodged. He was unconscious for four hours, and on recovering it was found that there was paralysis of both *lower* extremities, with intense burning pain in the left hand. Two months later a little power of movement was gained in both legs, and in five months he could walk with crutches, but the burning pain in the hand remained for ten months. This upper limb was numb, its nutrition much impaired, and the fingers were rigid and permanently semi-flexed.

Three years from the date of the wound he died.

A particle of lead was found between the left brachial plexus and the corresponding subclavian artery, and the ball was lying on the side of the spinous process of the second dorsal vertebra. The spinal cord was congested, but free from lesion.

I have taken some trouble in extracting from the reports of cases given by Messrs. Mitchell, Morehouse, and Keen, in their work on "Gunshot Wounds and other Injuries of Nerves,"

the principal trophic lesions they noticed, and they are the following:—

Atrophy of muscles.

Subacute inflammatory states indicated by—

Swelling and congestion of the parts below the seat of injury.

Edema.

Thickening of the cuticle.

Glossiness of the skin.

Cracks and fissures in the skin.

Bed-sores.

Eczema.

Curved nails like talons.

Retraction of skin of ungual phalanx and exposure of matrix.

Painful swelling of joints.

Altered secretions as acid sweat, or none.

Besides these symptoms there were loss of motion and sensation, diminished contractility of muscles on electrical excitation, muscular contractions, and abnormal sensations, as pricking or burning pain and hyperæsthesia, with diminished temperature.

In the very interesting series of cases recorded by Mr. Hutchinson in the London Hospital Reports, the chief results of injuries of nerve-trunks observed were very similar, including loss of sensation and of motion, of course; in addition, depressed temperature, smoothness and shininess of the integument, general atrophy of the finger below the injury, formation of whitlows, stumpy and broken nails, and burning pain in the hands.

Amongst the most recent contributions that have been made to the literature of this subject is a series of six cases reported by Schiefferdeeken, of wounds of the upper extremity, the nerves being injured and various trophic disturbances following. Amongst these were extreme atrophy of the muscles, especially of the fore-arm and hand; thickening of the skin, accompanied in these cases by strong pigmentation and desquamation. With one exception the finger-nails exhibited a peculiar kind of hypertrophy, being strongly curved or claw-like, with transverse terraces or ridges. In two cases where the nerves of particular nails appeared to be uninjured, the nails remained normal. The

arms also exhibited increased hairiness ; and in three cases there was increased secretion of sour-smelling sweat. In all cases the temperature of the affected arm was lower than that of the uninjured one. The changes in the nails and the increased secretion of sweat appear to be connected with certain nerve paths ; and these, he thinks, constitute or represent trophic nerves ; whilst the other changes are due to the fact that the muscles being atrophied whilst the supply of blood remains unaltered, vicarious hypertrophy of the skin and epidermoid appendages results.

Other writers, as Edis, have noticed as results of nerve lesion the occurrence of various cutaneous affections, as erythema, roseola, acne, herpes, urticaria, eczema, and pemphigus.

It seems to be demonstrated also that certain lesions of the spinal cord can quickly produce very serious disease of the inferior extremities, or of the parts below the seat of injury. Charcot¹ has collected a great many cases of this kind. Sir Benj. Brodie also observed sloughing of the heels twenty-four hours after a lesion of the spine. Jeffreys mentions a case where a man fell from a height and smashed the fourth vertebra. An eschar made its appearance on the fourth day after the accident, on the sacrum. After death the spinal cord was found softened and grey in colour. Colling relates a case of a man who fell so that his neck was bent strongly forward, causing dislocation of the seventh cervical on the first dorsal vertebra. Here also eschars formed on the sacrum on the eighth day, and on the heels on the fifteenth day. Post-mortem examination showed that the spinal cord was softened and contained a small abscess opposite the seventh cervical vertebra. Brown-Séquard, again (*Gaz. Méd.* 1871), observed gangrene of the ear in two guinea-pigs as the result of injury to one corpus restiforme, as well as hæmorrhage in the lungs after lesions of certain parts of the base of the brain, especially of the lateral part of the pons. He has satisfied himself that the nerves implicated in this process are given off from the medulla below the phrenic, and that they in part decussate.

But, again, there are cases on record in which spontaneous lesions of the cord have occurred, and in which eschars have rapidly formed. One such case is given by M. Durian in the *Union*

¹ Brown-Séquard, 1868, p. 173.

Médicale. In this case a hæmorrhage took place in the grey substance of the lumbar enlargement ; a great eschar appeared upon the sacrum on the fourth day after the occurrence of the paralysis. M. Charcot has observed a similar production of eschars in cases of exacerbation of acute sclerosis of the antero-lateral columns, and in cases where the matter from an abscess had suddenly discharged itself into the rachidian cavity.

(To be continued.)

THE CASE OF NAPOLEON III.

THE unfortunate issue of the Emperor Napoleon's case was invested with such absorbing political interests that there was at first some danger of its medical lessons being lost or undervalued. But the remarkable character of the bulletin in which the results of the post-mortem examination were described, and the evidences of a quite unsuspected difference of opinion between Sir W. Gull and the other medical advisers of the late Emperor, aroused attention; and since the press has commenced a discussion on this subject, it is, of course, quite impossible for the *Practitioner*—a journal especially devoted to therapeutics—to avoid a full consideration of this most important question of surgical treatment.

Two statements stand out, on the face of the bulletin and Sir W. Gull's appended note, neither of which can be allowed to pass current as the expression of existing medical and surgical science, without strict investigation. The first of these purports to represent the united opinions of all the medical men who attended the Emperor at Chislehurst, and of Dr. Burdon-Sanderson as pathologist: the second is the special declaration of Sir W. Gull, on a particular point as to which he disagrees with his colleagues. All the medical men agree in the following declaration:—That there were evidences of sub-acute cystitis, and sub-acute inflammation of the prostatic portion of the urethra, but none of injury from the operations: that there was dilatation of both ureters and the pelves of the kidneys: that the left kidney was excessively dilated and atrophied, and the right kidney was the subject of more recent sub-acute inflammation of the uriniferous tubes: that death was caused by failure of the

circulation due to the general constitutional state of the patient ; finally, that the kidney-disease was of such nature and so advanced, that it must in any case have shortly proved fatal ; but that the disease (*i.e.* probably, the degree of it) *was not suspected, and could not have been detected during life.* We italicise the points which have especially excited comment from the profession.

The point as to which Sir W. Gull disagreed with his colleagues was this :—He expressed the opinion that the phosphatic calculus in the bladder was the consequence, and not the cause, of the cystitis (which he calls *catarrhus vesicæ*) ; he suggested that the exterior layers (crystalline phosphate) were quite recent, and even that the (amorphous phosphate) nucleus may have been of *comparatively recent origin*, instead of being, as the other authorities believed, of several years' standing. He appears to have thought it probable that the vesical inflammation, itself the first disease, extended to and involved the ureters and the pelves of the kidneys before the existence of the calculus, though the presence of the latter must have aggravated the lesions in the more advanced stages of the disease.

Now, as regards the first of these statements, in which the medical men were unanimous, the following remarks must be made. We are told that so old-standing and serious a lesion of the kidneys as is here very plainly described was not suspected and could not have been diagnosed at the time when lithotripsy was decided upon : a statement which, while its importance to all operating surgeons is immense, as absolving them from the need of accurate renal diagnosis before encountering the risks that attend the operation in cases where the kidneys may be deeply implicated, is also extremely surprising to unbiassed pathologists. Either there are some curious facts behind of which nothing has been said, or the above contradicts the received maxims both of medicine and of surgery. Taking merely the description of the post-mortem, we find that the calculus was of very large size, and, in the opinion of so eminent an authority as Sir Henry Thompson, must have existed for several years ; and we know that the magnitude of the stone was actually not much greater than Sir Henry Thompson had judged it to be from the preliminary sounding. What, then, was the degree of antecedent probability that such a calculus must have already provoked

serious renal mischief? We should be greatly surprised if the surgeons of this country and of Europe—could their opinions be taken by vote—would not almost unanimously affirm that there were at least nine chances to one in favour of the existence of serious kidney disorganisation in such a case. But the known size of the calculus and (*pace* Sir W. Gull) the all but certainty of its long existence, in a person sixty-five years old and worn with long years of anxiety and labour, were but the smallest part of the materials for forming an opinion. For the moment we shall waive the point as to the possibility of making a physical diagnosis from the chemical and microscopical characters of the urine. What was of infinitely greater moment was the previous medical history of the Emperor. It is, one cannot but say, most unlikely that the English medical attendants were kept in ignorance of those significant facts which have since been published by the *Union Médicale* and other French medical journals, for they had the advantage of consulting with Drs. Conneau and Corvisart, to whom the facts were intimately known. We shall not go further back than we are led by the now famous report of MM. Ricord, Fauvel, Nélaton, G. Sée, Corvisart, and Conneau, on the Emperor's case in 1870. We are inclined to place little weight on the circumstance that M. Guillon is said to have discovered a stricture of the urethra in 1866, since the eminent men above named evidently attached little importance to that condition, which seems to have been but temporary. The report of 1870 clearly demonstrates that since 1867, at least, there had been an illness characterised by (1) repeated hæmaturia; (2) purulent urine, with more or less marked fluctuations; (3) frequent dysuria, characterised by spasm, or want of power, in the bladder; and they expressed the unhesitating opinion that such symptoms could only be referred to calculous inflammation of the kidney and bladder (*pyelo-cystite calculeuse*). It is said that this report was concealed from the Empress, at the moment, for political reasons; but, we repeat, one can hardly imagine that Drs. Conneau and Corvisart concealed its tenor from their English colleagues at Chislehurst.

The above historical facts are of such unmistakeable significance that they throw comparatively into the shade a very

interesting question which has been raised by the writer of a most able special article on "Surgical Kidney" in the *Lancet* of January 18th. That gentleman declares that the chronic nephritis set up by the backward influence of stone in the bladder is really incapable of diagnosis by the ordinary means of physical examination: that the mischief is almost entirely inter-tubular, and that either no tube-casts are formed or they are immediately dissolved in the alkaline and putrescent urine—in any case cannot be found with the microscope: and that anything like accurate estimation of the urea is rendered almost or altogether impossible by the chemical and physical state of the urine. We shall not dwell upon the views of this writer (who commands respect by the evident tokens in his paper of unusually large experience in the morbid anatomy of surgical kidney) because it is really waste of time to discuss whether or not such chemical and microscopical diagnosis was possible in the Emperor's case. Surely, there was no need whatever for any resort to dubious means of decision. The historical facts above cited of themselves prove to demonstration, in our opinion, that the operation of lithotripsy was undertaken under circumstances in which there was much probability that the patient's kidneys were seriously disorganised. It is certainly no carping criticism, but a mere act of justice and self-defence, for the English medical profession to repudiate the statement of the bulletin, that it was impossible to guess, beforehand, that the Emperor's kidneys were seriously disorganised. That the medical attendants should have found any such impossibility is extremely surprising: and we feel certain that the profession at large will decline to admit that any impossibility, or even serious difficulty, need have existed.

Although we should not ourselves have originated them, it was inevitable that the additional questions should be mooted whether an operation of any kind was admissible under the circumstances of the case; and, if so, whether lithotripsy was the proper proceeding. In our opinion the first question can hardly be positively decided; but the second seems to admit only of a negative answer. Whether the Emperor should not have been left alone may perhaps be considered doubtful; for while, on the one hand, any operative procedure must have been attended

with appreciable risks, on the other it is notorious that many patients with even very serious calculous pyelo-cystitis survive for several years, and (notwithstanding the statement in the bulletin) there appears no special reason why the Emperor should not have done so likewise. As to the second question, whether lithotripsy was the proper procedure, it is to be observed that the mischief which lithotripsy, assuming it to be properly performed, is capable of producing in such cases as the Emperor's is entirely independent of damage done by the instrument. An amount of irritation is set up which in the majority of cases cannot fail to aggravate any existing tendencies to renal mischief. It is impossible for us to say whether any operation was justified: the Emperor himself may perhaps have had pressing reasons for thinking it worth while to run some considerable risk: but certainly, if anything were to be done, it appears, at first sight, that lithotomy offered the best chance, since it could have been performed rapidly and once for all: and we think it eminently desirable that the great surgeons, both British and Continental, should express their opinions on this point.

As regards the view adopted by Sir W. Gull, that the calculus was mainly or wholly of comparatively recent formation, we believe it is unnecessary to say anything. The medical press generally, and all surgeons with whom we have spoken in private, consider this theory untenable.

We may just say, in conclusion, that we should not have taken any notice of the Emperor's case, or in any way have impugned the opinions or practice of the medical attendants, but for the surprising statements contained in the post-mortem record and the rider appended to it.

Reviews.

Skin Diseases. By TILBURY FOX, M.D. Lond., F.R.C.P.; Physician to the Department for Skin Diseases in University College Hospital, &c. 3d Edition, much enlarged. London: Renshaw.

A Treatise on Diseases of the Skin and its Appendages. By AUSTIN MELDON, L.K.Q.C.P., &c. London: Longmans. Pp. 270.

THESE two books are sufficiently different in merit to give us examples almost of the two extremes of good and bad in the treatment of one subject. The work of Dr. Tilbury Fox, even in its previous small form, was always recognised as one of high value: there was an earnest directness and absence of conventionality in it, that was at once felt to be a refreshing novelty in English dermatology. The present edition, however, is a great advance and improvement on its predecessors. The volume is now a large and handsome octavo, and contains some sixty-seven additional illustrations; as to the latter, we cannot but regret that the author, who is known to be a most competent skin microscopist, should not have given us his own drawings instead of those, beautiful though they are, which have been lent him by Drs. Auspitz and Neumann. Dr. Fox's work is everywhere marked by keen observation and insight, and in his present edition he introduces us to two new skin diseases. The first is a case of multiple growths called *fibroma fungoides*, and is distinguished from *fibroma simplex* by the tendency to ulcerate, the rapidity of its growth, and by its vascularity. The other is a curious affection of the sweat glands, called by Dr. Fox *dysidrosis*; it is characterised by the retention, in the follicles of the skin, of sweat rapidly and freely secreted. This last is particularly worthy of attention; not only for its own sake, but for its interesting analogies with other diseases.

On the subject of treatment, which is especially interesting to ourselves, we have found Dr. Fox's book very satisfactory; as much so, indeed, as one could hope for at the present moment, and perhaps until there has been a good deal of further time

allowed for the development of dermatology on a sound pathological basis. Dr. Fox is himself a firm believer in the necessity for connecting treatment with correct pathology, and has himself done much to realise it. His chapter on the general principles of skin-therapeutics is very sensible, and will probably encourage many to pursue this subject who would have recoiled with dismay from the difficult task of extracting a practicable plan of treatment from the works even of great authorities on skin diseases: and what is said in a general way in this chapter is amply supplemented by details in the sections on particular forms of diseases. There are many points of interest and novelty; personally, we have been most instructed by the manner in which the author, while dealing very fully and carefully with the use of local remedies (on the use of *baths* especially), has illustrated the necessity for internal remedies in many cases, and has also shown how the latter may be employed on intelligible principles. We are certainly surprised, for instance, at the decided manner in which he speaks of the direct influence on many very troublesome skin-diseases—e.g. *pityriasis rubra*,—that can be exerted by the employment of diuretics; and altogether our feelings, on closing Dr. Fox's volume, are more satisfactory and hopeful in regard to dermal therapeutics than they had previously been. It must certainly be regarded as our standard work on practical dermatology.

Of Mr. Meldon's book we are sorry to have to speak in the only way in which it is possible to speak with sincerity. The work by no means gives us the idea that the author is deficient in ability; and indeed he has previously given decided proofs of talent by some researches on ovarian disease which were rewarded with the gold medal of the Dublin Pathological Society. The faults of the present book seem entirely due to the rash haste with which it has been written: a fault not unpardonable in young writers, but which often renders their work useless, as Mr. Meldon's book is. The author cannot possibly have made an adequate study of modern skin pathology, or he would not have spoken, in his preface, of our knowledge of this subject having made but trifling progress of late years. We should say, on the contrary, that in no department of medicine has there been more decided movement, although the results are doubtless far from complete as yet. There is no need to enumerate the illustrious names of German and French observers which will immediately occur to every competently-informed person: but we will take a simpler illustration by pointing to the enormous gap which is represented by the change from Willan and Bateman (admirable as their work was) to the days in which it is possible to deal with the general subject of skin diseases as Dr. Fox has done, or to produce a pocket hand-

book of skin-therapeutics so excellent and clear as that of Dr. Robert Liveing. With the modern dermatological literature we must suppose Mr. Meldon to be very imperfectly acquainted; if it is not so, he has an unusual talent for concealing his knowledge. But there is one accidental piece of evidence which at once convinces of the haste, and lack of seriousness, with which Mr. Meldon has carried through his task: he has published, apparently at the same moment, a treatise on gout and rheumatism, as if the enormous subject of cutaneous disease were not enough to occupy his energies. Of that book we may have something to say on a future occasion; we shall only speak of it here, as perhaps indicating the mode in which Mr. Meldon has had his attention disturbed, and his skin-book spoiled. We have said that our author cannot be *familiar* with modern dermatological literature: yet he knows enough of it to have done one useful thing; he has drawn up an appendix in which the student will be able to see all the principal systems of classification which have been propounded. But the moment we penetrate beneath the surface of his knowledge we detect its superficiality; many instances of this could be given, but we shall content ourselves with a very few. For instance, opening the book at random, we come on the subject of "Pityriasis versicolor," and in connection with this we naturally turn also to the section on "Chloasma." Mr. Meldon announces, with considerable *empressement*, that chloasma is *not* a mere variety of pityriasis, and that he has been able actually to demonstrate the difference to his pupils: he likewise mentions Hebra's application of the term to pigmentary discoloration. He seems to know that true chloasma is parasitic, but speaks as if the parasite were unknown, and, in the treatment which he recommends (blistering collodion, mercurial purge, followed up by a saline mixture), seems to be quite at sea with regard to the proper management of one of the most simply local and parasitical diseases that exist. Again, in the chapter on Leprosy we meet with the astonishing statement that the anæsthetic form of the disease is "undoubtedly contagious:" and under the head of treatment the following most unsatisfactory sentence occurs:—"Quinine, iron, mercury, iodine, arsenic, cod-liver oil, bromine, bleeding, baths of various kinds, have all failed; but any one of these, in conjunction with good nutritious diet and wine, ought to be tried." We wonder whether Mr. Meldon had any distinct consciousness of what he was writing when he penned this sentence, and whether he seriously means that it would be judicious practice to combine high living and phlebotomy, for instance, in the treatment of lepers. He does not seem to know anything about localised muscular atrophies as a phenomenon of anæsthetic leprosy, and he never mentions

faradisation as a remedy. In speaking of tinea favosa he calls this comparatively rare disease "incomparably the most important" affection of the scalp!


It is a very great pity that this book has been written; for the author had plenty of ability to do better, and the kind of work which he has produced is one which cannot be looked upon with any sort of favour by those who desire the progressive improvement of clinical teaching. It is a volume that students will read for its brevity and clearness, but upon which they cannot safely rely. Under the circumstances, we are really sorry to say that the external appearance of the book is most pleasant and attractive.

On the Surgical Applications of Electricity; introductory to a Course of Lectures on Systematic Surgery. By JOHN DUNCAN, M.A., M.D., &c. Edinburgh: Oliver and Boyd.

WE are much pleased to have the opportunity of again calling our readers' attention to that exceedingly important subject, the treatment of surgical affections by means of electricity, or rather to the particular topic of galvano-puncture for aneurism. More than two years ago we noticed the extremely interesting proceedings of Ciniselli and De Cristoforis in this matter; and since some of the highest surgical authorities in this country persist in looking upon galvano-puncture as a proceeding which should hold no higher rank, as a remedy for aneurism, than the passing of threads, wires, &c., through the sac, or the mere use of cold, we must declare emphatically that this is not a correct statement of the case. Dr. Duncan has long been a worker in this field; he has repeatedly performed the operation, and has assiduously followed the course of experimentation by others; his words, therefore, have a weight which no mere *ipse dixit*, even of the most eminent surgeon, can be allowed to set aside. The main feature in his present pamphlet is the relation of a most interesting and important case, in which an aneurism of the aorta was already on the very point of bursting externally: in these apparently hopeless circumstances, a very remarkable arrest of the dangerous phenomena took place, and death was certainly delayed by at least four months: and it even seems probable that the tumour would not have taken on the process of enlargement again, had it not been for an unfortunate mental agitation to which the patient was subjected.

It is astonishing to learn that no less than twenty-seven aortic aneurisms, to Dr. Duncan's knowledge, had been already treated by galvano-puncture. In three of these the operation proved fatal: in five complete success is claimed: the remaining nineteen were not cured, but in ten of these, either temporary

cure, amelioration, or remarkable retardation of progress is reported. Dr. Duncan now adds two fresh cases. In one, he has applied galvano-puncture three times; in each case there was temporary improvement of the symptoms, which, however, have again appeared. The other is still in the Royal Infirmary, under Dr. Balfour: a remarkable diminution in size and pulsation has resulted from one operation, and at the end of three weeks this improvement is still progressing.

On a general review of the whole subject of galvano-puncture, as illustrated by recent researches, we cannot doubt that it is destined to become a most important agency. More especially is this the case in reference to aneurisms of the ascending and transverse aorta; it seems clear that for this desperate affection no surgeon can in the future be allowed to think that he has done his duty unless he has performed either the distal ligature or the galvano-puncture, or unless he has satisfied himself that for very special reasons these operations are inadmissible. Dr. Duncan says, very justly, that for aortic aneurisms even heroic measures would be justifiable, and that galvano-puncture is *not* a heroic measure. The most serious danger seems to be that of inflammation of the sac; and this, it is likely, will be avoided in the future, by operating with a very weak current applied for a long time together; perhaps also by the plan of alternating the current, so as to make the needle in the sac first the positive and then the negative pole. On the whole, too, we think Dr. Duncan proves that the insulation of the needles with vulcanite (to prevent cauterisation of the skin) is necessary, as against the assertions of the Italian physicians. 

[We owe Mr. Erichsen an apology for an error committed in our review of his "Science and Art of Surgery" and his article on "Aneurism" in Cooper's Dictionary. He has made it clear to us that the want of corrections down to the present moment, respecting the treatment of Aneurism, could not have been helped, as the articles were printed long before the omitted facts, to which we adverted, had been published.

The above rectification of a mistake as to facts we are of course delighted to make: but we cannot offer any apology for our little joke about the "bloodthirstiness" of surgeons, nor for anything else in the review.—ED. PRACT.]

Clinic of the Month.

Intra-uterine Medication in the Treatment of Chronic Uterine Catarrh.—Dr. Playfair commences a series of lectures, in the new volume of the *Lancet*, on this subject, in which he describes the various means usually adopted. It is evident, he says, that by this means any topical remedies that may be deemed suitable can be very effectively and readily applied to the uterine mucous membrane, but due care should be taken both in regard to the mode in which the injection is made, and the nature of the solution or other material injected; and many cases are on record where most serious results have immediately succeeded their incautious use. It has been suggested that dilatation of the cervix with laminaria or sponge tents should first be adopted. But Dr. Playfair remarks that to treat effectually an old-standing case of uterine leucorrhœa we require to renew our applications at intervals for weeks or months. To suppose that under any circumstances it would be justifiable to repeat the dilatation of the cervix, say once a week, is an absurdity, since this is in itself a formidable operation, apt to be followed, even when most carefully done, by serious inflammatory mischief. If, then, dilatation be an essential preliminary to intra-uterine injection, as by common consent it seems to be, that method of treatment is at once put out of court in cases of uterine catarrh, although it may still be admissible in other conditions, such as menorrhagia, where their frequent repetition is not necessary. The danger of intra-uterine injection has suggested the application of various solids to the uterine mucous membrane. Sir James Simpson occasionally employed for this purpose fine intra-uterine pessaries made of some soluble material with which nitrate of silver or sulphate of copper was mixed. Dr. Braxton Hicks also uses points made of sulphate of zinc, which are passed into the cervical canal and allowed to melt there. Dr. Thomas, of New York, recommends medicated tents of sponge of sufficient size to fit the cervix, and saturated with nitrate of silver, tannin, and the like. The use of sponge tents is strongly recommended by Dr. Emmett and others, as in itself of great

value in certain conditions of chronic hypertrophy of the cervix combined with a granular state of its villi. Dr. Playfair thinks that such applications are not likely to prove of much benefit, since, if weak they will have no action, and if strong they are likely to set up violent inflammation. Professor Courty, of Montpellier, however, states that he has had great success in cases of uterine catarrh from the introduction of a small piece of nitrate of silver into the cavity of the uterus, which is allowed to melt there. He recommends certain precautionary measures, as that several days should have elapsed since the last menstrual period, the absence of any flexion of the uterus, which might prevent the escape of the discharge saturated with the melted caustic, and the absence of any marked congestion or inflammation of the uterus. Dr. Playfair appears to disapprove of this proceeding as being coarse, violent, and uncontrollable, and also because there is some risk of producing induration and contraction of the cervical canal. Mr. Clay, of Birmingham, has recently proposed to medicate the interior of the uterus by means of the insufflation of powders. He combines the remedial agent with finely powdered wood charcoal; the powder being introduced by a special instrument contrived for the purpose. The last mode of intra-uterine medication, and that of which Dr. Playfair most approves, is the use of fluid applications—such as tincture of iodine, a solution of nitrate of silver, chromic acid, and the like—which are applied to the uterine mucous membrane by some contrivance which admits of its surface being covered by the application, without any amount of fluid being left *in utero*. This method is strongly and was early advocated by Dr. Miller, of Louisville. (*Lancet*, Jan. 11, 1873.)

Ergot in Headache.—Dr. D. R. Silver, M.D., of Sidney, Ohio, has through the medium of the *Reporter* called attention to ergot as a remedy in headache. He is not aware that it has been reported of use in that very prevalent affection and symptom of disease. Its physiological action is established. It produces contraction of the muscular coat of the arteries, and “is a special stimulant of unstriated, involuntary muscular fibre, wherever found” (Brown-Séquard). The causes of headache are many and various, known and unknown. Whether known or not, we generally wish to give relief to the suffering patient before the cause can be removed. It is safe to assert that in a majority of cases of “sick-headache,” and of headache unaccompanied by sickness of stomach, we have hyperæmia of the brain. And it is just in these cases that ergot is most effectual. Yet good effects have been noticed when there was no evidence of congestive hyperæmia, but a state rather of anæmia. This apparent paradox is explicable only by supposing that the

arterial tonicity produced favours the return of blood. Paradoxes are numerous in medical practice. "Venesection sometimes relieves the effects of anæmia of the brain" (Niemeyer). You can never certainly predict whether ergot will or will not do good in a certain case. Dr. Silver recommends his medical brethren to try it in every case, and they will often be surprised with the result. A record of many cases assures him that it is better than any other single article of the *Materia Medica*, in this disease or symptom of disease. He recommends it to patients who are subject to the malady thus: *R* Squibb's fld. ext. ergotæ, gtts. x-xx. For one dose. To be repeated every half-hour until relief is obtained, or four or five doses are taken. The primary effect of opium is to produce hyperæmia of the brain. To neutralise this action he employs with it fld. ext. of ergot. The combination has a happy effect in cases in which opium alone would be contra-indicated by the flow of blood to the brain. He desires it to be understood that he does not regard ergot as a specific for headache. But thousands of people are made miserable once a fortnight or once a month (especially women), who by the use of the above prescription may be made for the time comfortable. Dr. Silver's experience with ergot in the headache of fevers is limited. But he would expect no good result from it, since the pain is then probably produced by the abnormal temperature and quality of the blood, instead of being occasioned by fulness of the cranial vessels, as once supposed. (*Philadelphia Medical and Surgical Reporter*, Oct. 19, 1872.)

Blister Treatment of Rheumatism.—In some remarks on the blister treatment of rheumatism, Dr. Peacock states that, as the result of the analysis of the cases that have come under his care in St. Thomas' Hospital, he finds that (1) Rheumatic fever is of very variable duration and intensity, and that there is no certain means of ascertaining, at the commencement of an attack, what will be its character. The patient may at first present active symptoms, which may soon subside; or the disease may at the commencement assume a mild form, and subsequently become severe; or an attack, though never of any great intensity, may be very much prolonged. (2) The proportion of cardiac and other internal complications which obtains in any given set of cases, and which at first sight would appear to be a very fair test of the success of the different kinds of treatment adopted is very variable, without reference to the circumstances in which the patient is placed whilst under care. In a large number of cases the evidences of complication are present to a greater or less degree before any treatment whatever is employed. Dr. Peacock then proceeds to point out that in order to determine the value of any particular line of treatment, the patients

subjected to it should first be kept at rest for a day or two under favourable circumstances; then divided as far as possible into two classes, the mild and severe; and finally treated in exactly the same mode. He has endeavoured to comply with these conditions in 233 cases that have come under his care for several years past, and has systematically adopted the blister plan. At first he tried it only tentatively, one, two, or three blisters being applied at the same time, or in succession, and in conjunction with other remedial means; and the general impression which he formed was not very favourable. Subsequently he was induced to apply the blisters much more freely, three or four, or even six at the time, and in rapid succession a still larger number; and he was then led to form a high opinion of their value, and to confirm what has been said in their favour by Dr. Davies. The blisters are generally two or three inches wide, and sufficiently long to encircle the limb. They are placed above the chief joints that are affected, and are usually put on in the after part of the day; in the morning, or when they have risen sufficiently, the serum is let out, and the surfaces are covered with warm linseed poultices, and these are continued for several days. Sometimes there is contemporary increase of pain when the blisters begin to draw, and the temperature rises, and the patients are restless at night, but generally there is very marked amendment in the morning, both the swelling, tenderness and pain being reduced, and the constitutional disturbance relieved. Generally, with local means constitutional remedies, especially the bi-carbonate and nitrate or tartrate of potash, are given more or less freely, according to the severity of the symptoms. (*British Medical Journal*, Jan. 18, 1873.)

Prognosis of Warts.—In a clinical lecture on cases of rodent cancer, Mr. J. W. Hulke draws the following conclusions from the cases that have fallen under his notice:—1. Not to think too lightly of small, hard pimples and warts in the face, in persons advanced in life, but promptly and thoroughly to excise them, especially if they show a tendency to grow, ooze, and scab. Their complete excision, together with a broad fringe of sound tissue, will probably secure a future immunity. It is advantageous to close the fresh wound, when large, with a flap of sound skin from an adjoining part. 2. Never to try to destroy them with nitrate of silver, as is too often done, because its action is too superficial, and its use seems often to hasten their progress. 3. When the surface of the ulcer is so irregular that complete excision is impracticable, it should be supplemented by freely burning with a hot iron those parts which could not be reached with the knife, and by the free application to them of

the chloride of zinc paste. 4. Some apparently desperate cases at an advanced stage may thus be treated very successfully, if the patients possess confidence and docility. 5. Such composite operations are well borne by persons in advanced years, if care be taken to avoid much bleeding. (*Medical Times and Gazette*, Jan. 11, 1873.)

Indications for Administration of Cod-liver Oil.—M. Decaisne has endeavoured, in a recent communication to the Académie des Sciences, to state with some precision the indications for the employment of cod-liver oil. His deductions are, however, drawn from the observation of a not very large number of facts, viz. twelve cases of rachitis, thirty-six of scrofula, and fifty-two of phthisis. They are thus stated:—"1. It is especially in rickets, as many practitioners have already established, that the oil manifests its most indisputable and even curative action. 2. In these three affections, as in all those in which it is applicable, it acts as an analeptic and reconstituent, and as such it may be employed in the treatment of all conditions of the economy characterised by general cachexia, without being especially directed against this or that malady. 4. Desirous of testing as far as possible the statements of Dr. Pollock with regard to the fattening of calves, pigs, and sheep submitted to the oil, I have weighed most of the children slightly affected with scrofula and rickets, before, during, and after treatment; and, like him, I have been able to observe that when the dose exceeds certain limits (variable in the individuals), the weight ceases to increase, and that such cessation coincides with the loss of appetite and the reduction of nourishment. 5. Repeating the experiments of Dr. Greenhow, who states that increase of weight has always ceased in his patients, the subjects of phthisis, after by the use of the oil they had attained their normal weight, I have not obtained the same results as this skilful observer. In several cases, in fact, the normal weight has been surpassed. 6. Contrary to the opinion of some physicians, who profess that the oil is more efficacious when employed in an advanced stage of phthisis, my experience has shown me that it is only of utility in the first and commencement of the second stage, when there is little or no fever. 7. The oil, when its dose exceeds a certain limit, and especially in children, gives rise to a kind of lientery, and it is often found in the stools. 8. Proceeding from the principles now generally admitted, that the digestion and extreme division of fatty bodies constitute one of the functions of the pancreas, that digestion of albuminoid matters is effected by the pancreatic juice, and that the functional activity of this organ is closely connected with that of gastric digestion, I always administer the oil during meals and not in the intervals." (*Ibid.* Jan. 4, 1873.)

Extracts from British and Foreign Journals.

Discovery of Lead in Gunshot Wounds.—Dr. Deneux has taken up this subject of inquiry, first broached by M. Jules Guérin on the occasion of a wound in the foot of Garibaldi, and carried into effect by M. Nélaton in the production of his well-known style; M. Legouest has made a report upon the essay of M. Deneux, which contains the following observations. At the battle of Sedan, M. Legouest was called to Marshal MacMahon, who had been seriously injured by a fragment of a shell. He found the Marshal in the hands of a surgeon who, suspecting the presence of the projectile, had unsuccessfully probed the wound. This wound was as large as the palm of the hand, and was situated at the posterior and lateral part of the pelvis. M. Legouest in vain explored the wound with the finger and a female catheter. Foreseeing fatal consequences if the piece of metal were allowed to remain, and determining not to be foiled, M. Legouest placed the Marshal as nearly as possible in the position he occupied when on horseback at the time he received the injury: on then passing the finger into the wound, he felt, at a great depth and about an inch above the anterior superior iliac spine, an abnormal swelling, which was the foreign body itself. It was removed by a counter opening, and proved to be a fragment of lead forming part of the shell, which had carried with it part of the clothing. M. Legouest is of opinion that the fore-finger of the right hand and a female catheter are the best exploring instruments. He has little confidence in electrical apparatuses, which too often get out of order to be of much practical value. He approves, however, of M. O. Lecomte's probe forceps, and also of the probe sent to Dr. Zanetti by M. Nélaton. But inasmuch as this probe is not always or even commonly at hand, M. Legouest recommends a much simpler instrument, always accessible, since every soldier carries it in his pocket—to wit, the stem of a clay tobacco-pipe. A probe constructed of such a stem readily receives a dark grey mark from contact with lead, and if the end thus streaked with particles of the metal be dipped in vinegar to form an acetate of lead, and be then touched with a solution of iodide of potassium, the beautiful yellow colour of

iodide of lead is immediately produced. (*Journal de Médecine*, No. 10, 1872.)

Radical Cure of Hernia.—*El Progreso Medico* of Madrid records a new procedure for the radical cure of hernia, due to Professor Egea, of Princess Hospital, Madrid, and which has already been successful in three cases. M. Egea, struck by the idea that failure was due to incomplete invagination, has adopted a procedure by which he performs perfect invagination. For this purpose he makes use of an ordinary thimble, having a hole at the end and a lateral groove in which a transverse bit of steel may be moved. Hernia being reduced, invagination is effected with the left index; a long lance-like needle, with a strong thread passing through the hole in the thimble, is introduced upon the index, and is thus carried from within outwards, through the fundus of the invaginated sac, the neck of the hernial sac, and the abdominal walls, as high in front and externally as possible, so as to avoid wounding the internal organs. The needle thus draws upward the thread whose other extremity is attached to the bit of metal placed transversely in the thimble; this dragged upwards gets into the invagination, and takes the place of the index. The thimble is then secured in its position by means of a suture, whilst the thread is attached to an immovable bandage round the body. (*Progreso Medico* and the *Lancet*, Dec. 7, 1872.)

Nature and Treatment of Paraphymosis.—The course and violence of the symptoms of this disease, says Charles Mauriac, depend on the width, or rather upon the narrowness, of the præputial ring. The length of the prepuce has also an important influence, since the longer it is, the greater is the sub-præputial cedema; whilst if there happen to have been a primary congenital phymosis, the ring which marks the point of transition of the external into the internal lamina of the prepuce will be found to be dense, hard, resistant, and composed of firm connective tissue intermingled with numerous elastic fibres. Cicatrices consequent on fissures may have the effect of making this ring still smaller. Herpetic eruptions and Balano-præputial catarrh produce a condition of diminished elasticity. The vascular turgescence accompanying these conditions causes changes of volume and serious infiltration of the tissues, which, even where the præputial ring is tolerably wide, favour the occurrence of paraphymosis. But this form is easily reducible, and even if the tissue be somewhat broken down by pressure, no serious mischief is done. Even if no attempt at reduction be made, spontaneous healing will sometimes take place; some swelling remaining indicating previous hypernutrition. If the constriction and consecutive disturbance of the circulation have lasted

some time, partial loss of epithelium occurs, the surface soon exuding clear serum, and after a time a sero-purulent fluid. These erosions speedily heal if they are not brought into contact with the secretion of a contagious ulcer or of an indurated chancre. But it is impossible in the first instance to distinguish between such simple erosions and the early stages of a chancre, especially since the inguinal glands often become inflamed sympathetically in paraphymosis. The conditions, however, are quite different in inflammatory paraphymosis, in which either a part or the whole thickness of the limbus præputii may be fissured.

In consequence of the violent inflammation a plastic exsudate is poured forth into the meshes of the connective tissue, which increases the difficulty of reducing the prepuce, and this in proportion to the length of time it has been poured forth, and may even render it impossible if regular adhesions have formed between the sulcus glandis and the inferior surface of the prepuce. In many cases suppuration occurs in the tissues behind the point of strangulation owing to mechanical injuries, and the inflammation may extend to the whole penis. This constitutes erysipelatous or phlegmorous paraphymosis, which may again be combined with phlebitis and lymphangitis of the penis. Numerous abscesses may then form, which become confluent and undermine the skin to the root of the organ. This leads again to obstruction of the vessels, to the formation of hard knots and cicatrices, and to more or less deformity of the penis. There is often general disorder of the system. Swellings of the glands rarely occur, and should always give rise to the suspicion of the presence of a chancre. Gangrenous paraphymosis is much more rare than gangrenous phymosis. In the latter case the mortification of the tissue affects only the parts immediately adjoining the furrow of strangulation. Spontaneous circumcision then occurs, which is often accomplished as neatly as if it had been done with a knife; and it is extraordinary how rapidly complete healing occurs after the mortified part has separated. (*Medizinisch-chirurgische Rundschau*, Nov. 1872.)

Researches on the Physiological Action of Kinic Acid—Reduction of Ferric Chloride in the Organism.—M. Rabuteau states that kinic acid agrees in its action with citric and tartaric acids, and has no active properties peculiar to itself. Its alkaline salts have no taste, and, like those of other organic acids, are converted into carbonates in the body. They cause constipation when injected into the blood, and would probably be purgative if introduced in sufficient quantity into the alimentary canal. Ferric chloride is readily reduced by organic substances. To this reduction is due the blue stain which is

produced on the hands after using ferric salts or potassium ferro-cyanide. The author considers that ferric salts are reduced to ferrous in the stomach and are absorbed as such, and that when ferric chloride has been injected into a varicose vein to coagulate the blood, the coagulum which it at first produces disappears, because the ferric salt is converted into a ferrous salt, which hinders the coagulation of the blood instead of inducing it. (*Phar. Journal and Transactions*, Nov. 16, 1872.)

Treatment of Diseases of the Pharynx.—Dr. Harrison Allen observes that after the cause of the condition has been ascertained, the plan of the treatment is at once apparent, and presents comparatively few points of interest not already in our possession. The remedies for inflammation of the pharynx do not differ from those employed in other inflammations; and here, as elsewhere, the metallic salts hold their supremacy,—and chief among them the nitrate of silver. He believes that the judicious use of a solution of this substance, in strength ranging from twenty to eighty grains to the ounce, will accomplish more than any other agent in chronic pharyngitis with dryness of the parts about the naso-pharyngeal apertures, and in which, more particularly, the rhinoscope has announced the presence of a muco-chondritis of the Eustachian tubes, or the so-called adenoid condition of the roof of the pharynx. In those frequent instances of pharyngeal-tonsillar hypertrophy, with tendency to hawking of mucus, a Eustachian catheter used as a probe may be made to pass from the nose to the affected spot, and the offending secretion scraped away. In some cases Dr. Allen has made an application of the medicated stick, as it is called; namely, a fusion of nitrate of potassa and nitrate of silver. This he accomplished in the following manner. Equal parts of the two salts were melted in a test-tube; the twisted tip of a slender wire of aluminium was then dipped into the fused material. Upon withdrawing it, a small quantity of the mass adhered to it. A Eustachian catheter of broad calibre (Dr. Allen had an instrument of Britannia metal made for this purpose: it is shaped like a Eustachian catheter, but is of wider calibre) is now inserted into the nose. The patient being entrusted with the tongue-depressor, the rhinoscope will announce the exact position of the instrument. When it is known that the end of the curve is fairly engaged in the fossa of Rosenmüller, the rhinoscope may be withdrawn and the charged wire passed through the catheter with the disengaged hand, and brought in contact with the affected surface. Or a few drops of a strong solution of silver may be carried along the catheter by a syringe armed with a long nozzle (an ordinary hypodermic syringe, with a nozzle sufficiently long to reach the

curve of the catheter, will accomplish the purpose very well), after which the Pollitzer bag may be employed in blowing the contained fluid freely into the fossa. In the case of adenoid disease associated with spermatorrhœa, previously alluded to by the lecturer, marked benefit followed the application of the medicated stick to the roof of the pharynx when injections from beneath had failed. In Allen's hands this method of reaching the affected parts has proved more satisfactory than the pharyngeal syringe. The instrument is objectionable from the fact that it operates from below. Annoying spasm, too, often interferes with its application. With children, however, and intractable adults, it is a valuable adjunct. Dr. O. D. Pomeroy, of New York, has used extensively, and with satisfactory results, an instrument resembling a Eustachian catheter, but bulkier, to which is attached a Pollitzer bag and tubing. A few drops of the selected fluid are sucked up by the bag through the terminal orifice of the instrument, and thrown up above the soft palate. In pharyngitis dependent upon general naso-pharyngitis, no instrument can approach in efficacy the atomiser. The best form of this instrument with which he is familiar is that known as the Sasse sprayer. The peculiarity of this instrument consists in a test-tube receiver which is held in the left hand, and a pair of very long barrels, the points of which, when the receiver is near the mouth, are lodged within the axis of the pharynx; the whole being worked by a bulb and tubing held in the right hand. In specific ulceration of the naso-pharyngeal space, Dr. Allen has obtained good results from the use of a solution of sulphurous acid of one drachm to the ounce, sprayed upward through the naso-pharyngeal aperture; or the pure acid may be applied to the affected spot if the part thus operated upon lie below the palate. Where there is abundant mucus, as in lingering acute catarrh, a spray of strong alum-water proves oftentimes efficacious. It is in this class of cases that insufflations of alum are of advantage. The best insufflator with which he is acquainted is a simple glass tube, bent at convenient angles and furnished with a fenestra at about its middle; a light piece of india-rubber tubing attached to one end of the glass tube completes the instrument. The powder to be used—we will say alum—is inserted in the glass tube through the fenestra, which is then covered by a sliding cylinder of rubber. The instrument now being inserted in the pharynx, with the orifice of the tube pointing upward, the opposite end of the instrument is held between the lips of the operator, who quickly blows the powder up into the naso-pharyngeal space. The nasal douche must not be neglected as an adjunct to the treatment; more, however, as an aid in *washing* the parts than to medicate the region. Weak solutions of salt, or carbonate of

soda, used *tepid*, will meet every indication. The washing need not be repeated oftener than once a day—say at the time of the morning toilet. Such is a brief outline of the treatment of the different forms of pharyngitis. Without wishing to paint the subject in too bright colours, by saying that all difficulties can be overcome by the rhinoscope and improved means of medication, these methods are certainly more satisfactory than the old-time administration of gargles and snuffs; and it is certainly desirable to place pharyngeal medicine on a scientific basis, which with the aid of the rhinoscope is alone practicable. (*Philadelphia Medical Times*, No. 45, 1872.)

Treatment of Typhoid Fever.—The following is the treatment of typhoid fever adopted by M. Péter, Prof. Agrégé of the Hôpital de la Charité:—Every other day he gives a glass of Seidlitz water, and morning and evening an emollient injection. The injection he considers to be useful in removing putrid matters. The glass of aperient fluid, without exhausting the patient like a daily purge, also keeps the intestinal canal clear from disintegrated matter. He uses the sulphate of quinine in quantities amounting to from seven to fifteen grains per diem as a febrifuge, increasing the dose in proportion to the intensity of the attack. He places great reliance on alcoholic stimulants, prescribing every day four or five ounces of quinine wine, which is made into a lemonade so as to make from two to three pints of fluid, by which means the vegetable acids are freely and easily administered. These, he thinks, remove the crusts of the tongue, and the symptoms produced by putridity are removed. If the case goes on from bad to worse, if the fever becomes more intense, the temperature increasing, and nervous phenomena supervening, he willingly has recourse to the action of cold, but does not adopt either baths or even cold affusion, which require, he thinks, great circumspection in their application, but contents himself with simply sponging the surface of the body with a sponge dipped in vinegar. Two assistants are required: one lightly passes the wet sponge over the skin, whilst the second rapidly rubs it dry with a soft cloth and quickly covers it. He considers one washing per diem to be enough. (*Journal de Médecine*, No. 10, 1872.)

Traumatic Tetanus treated by the Bromide of Potassium.—Dr. Cephas L. Bard records the following case:—F. S., aged 15, daughter of a farmer, during the latter part of April 1872, stepped upon a bone, the vertebra of a hog, and although the wound produced was deep and bled profusely, yet it healed rapidly and produced but little inconvenience. Five or six days subsequently she complained of pain in her temples, of stiffness of her jaws, and of difficulty in opening her mouth, which

symptoms were attributed by her parents to a bad cold, and treated accordingly. Becoming worse, a neighbouring physician, Dr. C. W. Thacker, was summoned, and three days later Dr. Bard was called in for consultation. He found all the pathognomonic symptoms of traumatic tetanus present: a rigid contraction of the body, which was bathed with a profuse sour perspiration; opisthotonos; spasms at short intervals; aged expression of countenance, with the *risus sardonicus* well marked; temperature of the body 105° ; terrible pain in the epigastrium, due to spasm of diaphragm, which by former writers was regarded, when present, as the death-warrant to the patient; pulse normal, and mind clear. Retention of urine and constipation of the bowels were also among the symptoms present. There was no pain whatever at the site of the wound, which to all appearances was kindly healed, the cicatrix and its surroundings being perfectly firm, and but slightly indurated. Prior to the arrival of Dr. Bard, nothing but morphia had been given, but the symptoms became more appalling, and the intervals between the exacerbations were much shorter. Having laid open the wound situated in the inner plantar region of the foot, he discovered and removed a small spicula of bone, the tip of the spinous process of the vertebra upon which she had stepped, and which was firmly imbedded among the muscles of her foot. The use of stimulants and nourishing articles of diet were ordered; the warm bath; poultices to the wound; and bromide of potassium, commencing with thirty grains given every hour, till four doses had been taken, when both the quantity and the frequency of administration were lessened. A decided amelioration of the patient's condition almost immediately occurred. The spasm became less powerful and less frequent; the opisthotonos and rigidity of the muscles disappeared; the temperature of the body resumed its normal standard, and she slowly but gradually recovered, although the trismus, which was the last symptom to vanish, existed for three weeks later. During this time she continued to use the bromide, the whole quantity taken amounting to three ounces. No bad effects whatever from its protracted use were noticed, and she is now in the enjoyment of the best of health, enhanced, no doubt, by the recollections of the severe ordeal through which she has passed. (*Western Lancet*, July 1872).

Carbazotate (Picrate) of Ammonia as a substitute for Sulphate of Quinine.—In a paper on this subject by Dr. Dujardin-Beaumetz, in the *Gazette Médicale de Paris*, it is stated that one of the most obvious actions of carbazotic acid and its derivatives is the retardation of the circulation. Parisel showed this fact some time ago, and demonstrated that one centigramme of picric acid caused death in a frog by stoppage of the action

of the heart. The same effects are produced in rabbits by the ingestion of twenty drops of the acid. Picrate of ammonia has the same action, so that in the man the administration of four centigrammes of picrate of ammonia reduced the pulse from 76 to 72 in one instance, and in another from 84 to 76, in the course of half an hour. Tracings taken with the sphygmograph show also that the acid diminishes the intensity of the beats. This slowing of the pulse does not appear to be accompanied by any notable diminution in the temperature. If the doses be too large, or the use of the drug be too long continued, some curious cerebral symptoms are induced, consisting of a sensation of heaviness, vertigo, and general debility. The limbs become heavy, great indisposition to intellectual exertion is experienced, and there is a strong desire for repose. Headache resembling migraine is sometimes felt. This toxic influence of picric acid comes on four or five hours after its administration, and some remains of it may be felt even after twenty-four hours. Picrate of ammonia causes a yellow discoloration of the skin and conjunctiva, though this, as well as its emetic effect, seems to be only occasional. On being taken internally, a bitter flavour is felt, with a sensation of heat and burning in the stomach, but it does not cause any relaxation of the bowels. Carbazotate of ammonia is eliminated by the kidneys, and in large doses gives a peculiar smoky tint to the urine. Though it does not appear to diminish the volume of the spleen, it appears to act like quinine in removing the intermittent symptoms; and from his experiments and observations, M. Dujardin-Beaumetz believes he is able to draw the following conclusions:—

1. That carbazotate of ammonia is a very effective agent in the treatment of intermittent fevers.
2. That the suppression of the attack may be accomplished by the administration of from two to four centigrammes (one-fifth to half a grain) of the carbazotate in twenty-four hours.
3. That in these doses the remedy never appears to have any noxious effects, but is in point of fact better borne than quinine.
4. That this preparation of picric acid is not dangerous.
5. That the physiological action of carbazotate of ammonia presents very close analogies with that of sulphate of quinine.
6. That the use of this remedy should become more general, and that in a large number of cases it is destined to replace the sulphate of quinine. (*Gazette Médicale de Paris*, No. 39, 1872.)

Treatment of Urethral Fever.—Dr. Gouley, of the Belle Vue Hospital, New York, observes that as the existence of renal disease is a strong predisposing cause of urethral fever, it is necessary, in case such disease is even suspected, to institute a preparatory course of treatment for several days before the

intended catheterism be attempted; but he goes further than this, and prepares all patients—with the exception, of course, of emergent cases—for five or six days before they are placed under mechanical treatment; and consequently now has, in his own practice, but very few cases of urethral fever to treat. The preparatory treatment which he usually resorts to is as follows:—After free catharsis, rest should be enjoined for a day or two, a hot hip-bath ordered at night, a diluent drink three or four times daily, ten minims of tincture of chloride of iron three times a day, and five grains of quinine every night. Quinine was first given in free doses for urethral fever by Bricheteau, who, in 1847, reported several cases successfully treated with doses of ten, twelve, and fifteen grains. More recently Ricord, who was not at first a believer in the efficacy of quinine in urinary fever, said, at the Surgical Society of Paris, that he had come to the point of never performing any operation upon the urethra without having previously administered quinine, and that ever since he had adopted this preventive treatment the number of cases of urethral fever, so great before in his hospital service, had almost miraculously diminished. This alkaloid is undoubtedly one of the most effective of the remedial agents given to combat urethral fever, and should be administered in a dose of at least ten grains, with half a grain of opium after each catheterism, and, when necessary, should be increased to fifteen or twenty grains in the twenty-four hours. Mr. Long speaks highly of two-minim doses of Fleming's tincture of aconite, for preventing rigors in cases where they had occurred after catheterism. This is, Dr. Gouley believes, another excellent remedy, but he would not take it in exchange for quinine. He has lately, however, given it in combination with quinine. In the very mild cases of urethral fever, a hot drink of any kind, and rest for a few hours, will generally suffice. When that ominous complication, suppression of urine, occurs, the case should be treated with the greatest caution; and, in the first instance, the medical attendant should *beware* of administering stimulating diuretics. After the first catheterism—to positively exclude retention of urine—no instrument of any kind should be passed into the urethra. The next indication is to establish at once a vicarious excretion of the elements of the urine, if Nature in her conservative effort has not already done so. The skin and the intestinal mucous membrane should be made to do duty for the kidneys until the latter are in a condition to perform their function. The *hot-air bath* is the most rapid mode of effecting diaphoresis, but as it cannot be given more than once or twice in the twenty-four hours, it is necessary to administer by mouth quarter-grain doses of ipecacuanha every two or three hours, with hot borage tea, or any other diaphoretic. Catharsis may be procured and kept up by any of the

hydragogues; but small doses of sulphate of soda and of magnesia, in hot water, often repeated, will fulfil the object very well, without weakening the patient. Hop fomentations should be constantly applied during the day to the lumbar and hypogastric regions, and the loins should be freely dry-cupped. Then a teaspoonful of the infusion of digitalis should be given every hour or two hours, and the effect on the circulation closely watched. The whole cutaneous surface, which exhales sometimes such an offensively urinous odour, should be thoroughly dried and rubbed with a warm towel, at least three or four times in the day. The patient should be covered in bed, well nourished with concentrated mixed food, and, if he should become enfeebled by too profuse diaphoresis, a hot brandy toddy should be administered once or twice a day. The patient is generally safe, if there be not advanced renal disease, as long as diaphoresis and catharsis can be kept up. Complete suppression of urine may last several days, but when the kidneys do not secrete urine in the course of three or four days, the chances of recovery are decidedly lessened. (*Medical Record*, No. 162.)

Bibliography.¹

Die Seuchen, ihre Ursachen und Bekämpfung. Von F. Oesterlen. 8vo. Tübingen, 1873. Price 10s. 6d.

Lungenentzündung, Tuberculose u. Schwindsucht. Royal 8vo. Munich, 1872. Price 3s.

Chirurgie der Schussverletzungen. Von Dr. B. Beck. Vol. II. Specieller u. operativer Theil. Royal 8vo. Freiburg. Price 13s. 6d. ; or 22s. the two volumes.

Manuel de petite Chirurgie (438 Engravings). Par A. Jamain. 12mo. Paris, 1873. Price 7s. 6d.

Histoire médicale du Blocus de Metz. Par E. Grellois. 8vo. Paris. Price 5s.

Traitement preservatif et curatif des Sédiments, de la Gravelle, de la Pierre urinaire, etc. 12mo. Paris. Price 6s.

Dictionnaire de Médecine et de Thérapeutique médicale et chirurgicale. Par MM. Bouchut et Després. Royal 8vo. Paris. Price 21s.

¹ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C. ; Williams & Norgate, of Henrietta Street, Covent Garden, W.C. ; or Baillière, of King William Street, Charing Cross.

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NOTE ON THE TREATMENT OF HOOPING-COUGH BY BELLADONNA.

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for Sick Children.*

FOR a long time the use of belladonna in the treatment of hooping-cough has been more or less strenuously advocated, but since the administration of it in small doses appeared to me to produce no useful result, I was led to try the effect of much larger quantities.

Although only three cases are here mentioned, the drug has been tried with a great number of children, and in some with benefit, but in others with quite negative results.

All the children treated were placed under similar conditions as far as possible ; they were all in the same ward at a moderate temperature, and they were all fed in a similar manner. On admission, either no medicine was given, or only a placebo, so as to arrive at some idea with regard to the urgency of the case and the severity and frequency of the attacks.

In every case of hooping-cough the child has a great many attacks of coughing without any characteristic whoop, and this

is the more especially so in the early stage, when the child may cough from one to three weeks before the whoop is heard; again, during convalescence the cough remains more or less persistent some time after whooping has ceased.

In these cases the numbers of each kind are recorded, and it will be seen that while the number of whoops in the first two cases were lessened while taking belladonna, yet in all the influence of this drug on the number of coughs was much less evident; this may partly be accounted for by the fact that when the throat was dry the child was inclined to cough more. In those children who had any complication as pneumonia or bronchitis, and in those whose temperature was elevated, the drug did not seem to have any beneficial influence. In nearly all non-febrile cases it did good in lessening the severity and length, if not the frequency, of the paroxysms of whooping; in some, after the disease had lasted several weeks, it seemed to hasten a cure.

In the first case, which was an ordinary one of hooping-cough with no marked complication, more than thirteen drachms of the tincture of belladonna were given in four and a half days. He was only slightly affected at first with a dry tongue, but when the dose was divided and given more frequently he bore it very well and rapidly recovered.

The second case was that of a much younger child, and one, too, which had been much thinned by previous illness. This child had fifteen drachms of the tincture of belladonna in four days, with no more result than a blush over the skin for a short time, and dilated pupils; the whoops diminished a little in frequency, and considerably in severity. After a few days' interval sixteen drachms were again given in four days, and a rapid recovery took place. This was a much more recent case of hooping-cough than the preceding one.

The third case was the eldest of the group, and he was more affected than the others. Rather more than eleven drachms were given in four days, and after a short interval, fifteen drachms were given in five days: no beneficial result followed, and while he coughed about as much, the whoops were rather more frequent while he took the medicine than when it was discontinued.

CASE I.—Frederick G. E., aged five years, was admitted into the Evelina Hospital on July 24th, 1872. He had been suffering from hooping-cough for the preceding three months, and had somewhat lost flesh. No râles were heard over the chest, and the chest sounds seemed in every respect healthy. The appetite was good, and all that he had to complain of was a troublesome cough. For the first week no medicine was given, but he was kept in bed in a moderately warm ward, and placed on meat diet. During this period he whooped nine or ten times in the twenty-four hours, and had besides from eight to fifteen short attacks of coughing unaccompanied by a whoop.

July 30.—At 6 A.M. and again at 10 A.M., he had ℥xxx of tinct. belladon. At 11.30 A.M. the tongue was rather dry and glazed at the centre, but the pupils were natural, and there was no flush or feverishness; fifteen minims of the tincture were then given every four hours.

The next day the same quantity was given every two hours, but without producing any apparent effect.

Aug. 2.—He was rather restless during the afternoon; at 3 P.M., ten minims were given every hour.

Aug. 3.—Face slightly flushed; the coughing was so much relieved that at 8 P.M. the medicine was discontinued. After taking the tincture for four and a half days, the whoop nearly ceased, as will be seen in the following table:—

DATE.	COUGHS.	WHOOPS.	REMARKS.
July 28	8	10	No medicine given.
" 29	15	9	" " "
" 30	9	8	℥ij and mxv. tinct. bell. in twenty-four hours.
" 31	12	8	℥ijj " " " "
Aug. 1	9	5	℥ijj " " " "
" 2	5	6	℥ijj and mxl. " " " "
" 3 (to 8 P.M.)	3	1	℥j and mxx. for twelve hours.
" 4	none	none	Medicine discontinued.
" 5	2	2	
" 6	2	none	
" 7	1	1	

He coughed slightly after this date, but whooped only four times the following week, and was then quite cured.

CASE II.—Frederick William J., aged 2 years and 8 months, admitted into the Evelina Hospital on July 19th, 1872. He was a very delicate boy, and ever since he was five months old he had suffered at times from bleeding from the rectum, and this had always been accompanied by diarrhoea. A fortnight before admission his health had more markedly suffered; he rapidly lost flesh, his appetite had left him, he was thirsty, he passed "greenish-slimy" stools, and once or twice he had had prolapsus ani. Three days before admission, his mother noticed that he whooped for the first time, and this gradually increased in severity. On admission he was placed in bed and kept on a milk diet. Some mucous râles were heard on either side of the chest, but there was resonance all over the chest, and plenty of air entered the lungs. He was much emaciated, and the diarrhoea was very troublesome. Various medicines were given to check the diarrhoea, but nothing seemed to do so much good as steel wine, which was given in one-drachm doses three times a day.

Aug. 10.—He took his food very well; the diarrhoea had nearly ceased, and he was much better except with regard to the whooping-cough, which was very troublesome day and night. For the last five days he has whooped from nine to eleven times in the twenty-four hours, besides coughing eight to ten times in the same interval.

Aug. 11.—At 6 A.M. he took ℞xx of the tincture of belladonna, and a similar quantity was given every two hours day and night. At 11 A.M. there was a uniform blush over the face and scalp; the tongue was moist, pupils dilated, temperature normal; occasionally sick after a severe fit of coughing.

Aug. 12.—Medicine given as during yesterday. The pupils were dilated, the tongue moist, and the skin slightly so; there was no flushing of the face or scalp, and the child ate and slept well.

Aug. 13.—The diarrhoea was rather worse during the night, but not now. Tongue moist, pupils natural; the dose was increased to ℞xxv every two hours at 4 P.M. At 8 P.M. he was asleep, but flushed. Temperature, 98°6.

Aug. 14.—Seemed to be suffering in no respect from the medicine. Medicine discontinued. At this time he whooped less

frequently, but coughed nearly as often as before; the attacks, however, were very much less severe and shorter in duration.

Aug. 21.—There has been a great improvement during the last week; he has gained flesh, and is but slightly troubled with diarrhoea. The whoops are reduced somewhat in number and severity, and he coughs less. Twenty minims of the tincture of belladonna were again given every two hours, and continued for four days, when the whoops had nearly ceased. No symptoms appeared during the second period.

DATE.	COUGHS.	WHOOPS.	REMARKS.
Aug. 8	9	8	No medicine given.
" 9	8	11	" " "
" 10	7	8	" " "
" 11	7	4	3iv. of tinct. bell. in twenty-four hours.
" 12	9	5	" " " " "
" 13	6	7	3ivss. " " " "
" 14	10	6	3ijss. " " " "
" 15	10	7	No medicine given.
" 16	10	5	" " "
" 17	7	4	" " "
" 18	8	5	" " "
" 19	5	3	" " "
" 20	5	5	" " "
" 21	7	2	3iv. of tinct. bell. in twenty-four hours.
" 22	7	1	" " " " "
" 23	6	2	" " " " "
" 24	5	0	" " " " "
" 25	3	0	Medicine discontinued.

During the remainder of his stay in the hospital he only whooped once or twice, and his cough gradually left him.

CASE III.—Peter C., aged 6½ years, admitted into the Evelina Hospital on July 20th, 1872. Since the winter of 1870, he has suffered from a diseased hip, and this has continued to give him pain more or less ever since. In the spring of last year he had an attack of measles, and this was followed by whooping-cough, which came on about a month ago. The attacks were of moderate severity, and unaccompanied by bronchitis or pneumonia. He whooped from eight to twelve times during the day and night, and coughed fifteen or seventeen times besides. No medicine was given the first ten days, so as to obtain the daily average of the fit of coughing. He was kept in bed in a moderately warm room, and placed on meat diet.

July 30.—At 6 A.M. he commenced taking 3ss of belladonna every four hours. At 11.30 A.M., having taken two doses, his

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face became flushed, and the arms and chest slightly so ; pupils rather dilated, and the tongue moist ; after 10 o'clock he only took ℥xv every four hours. He was sick once in the afternoon.

July 31.—Dose increased at 10 A.M. to ℥xv every two hours. No apparent effects from the drug.

Aug. 1.—Eyes bright, pupils dilated, tongue moist ; he was "light-headed" during the night, and slept very badly. Throat rather sore.

Aug. 2.—Slept well last night ; the fits of coughing are less severe. Pupils rather dilated. No other apparent effects of the medicine.

Aug. 3.—The child seems better ; the medicine was discontinued at 8 P.M. Up to this time the number of whoops had not diminished, but their severity and duration were much less than before. For the next two and a half days, while he was without medicine, he whooped and coughed less. To ascertain if the tincture of belladonna would make any difference he was given ℥xv every two hours on Aug. 6th, and this was continued up to the 10th, but no apparent effects were noticed, and the boy seemed as lively and cheerful as usual. He whooped and coughed rather oftener than before, and in this case no benefit seemed to result from the administration of the drug, and in fact he seemed to cough less when it was left off.

DATE.	COUGHS.	WHOOPS.	REMARKS.
July 28	11	8	No medicine given.
" 29	17	12	" "
" 30	18	13	℥ij and ℥xv tinct. bell. in twenty-four hours.
" 31	15	9	℥ij " " " "
Aug. 1	12	9	" " " " "
" 2	9	7	" " " " "
" 3	5	5	" " " " "
(to 8 P.M.)		5	" " " " "
" 4	4	5	Medicine discontinued.
" 5	5	5	" "
" 6	9	7	℥i of tinct. bell. in twenty-four hours.
" 7	9	8	" " " "
" 8	7	7	" " " "
" 9	7	8	" " " "
" 10	9	7	" " " "
" 11	4	2	Medicine discontinued.
" 12	6	1	" "

He stayed in the hospital until Aug. 30th, but by Aug. 19th he was quite cured of the hooping-cough.

ON THE TREATMENT OF LUMBAGO AND RHEUMATISM WITH ACTÆA.

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ACTÆA has for some time been known as a useful drug in the treatment of the different varieties of rheumatism ; and the following observations were made in order to discover if there was any one symptom or chain of symptoms which indicated its use, as to whether the pain was made worse by heat or cold, increased by rest or motion, or felt most in the day or in the night.

The observations were made on twenty-nine cases of sub-acute chronic rheumatism and lumbago, and I regret to note that I have not found any one symptom or combination of symptoms which pointed out the unfailing utility of the drug, but at the same time the effects of the actæa on the above-mentioned diseases were very great.

The average age of the patients treated was 39 years 3 months.

Out of the twenty-nine cases, fourteen were suffering from lumbago, of whom eleven were cured ; and fifteen were suffering from chronic and subacute rheumatism, of whom eleven also were cured.

In the twenty-two cases which were cured—

The pain was worse at night in . . .	13
„ „ „ in the day in . . .	9
„ „ „ when cold in . . .	6
„ „ „ „ hot in . . .	11
„ „ „ „ resting in . . .	2
„ „ „ on movement in . . .	20

In the seven cases which received no relief—

The pain was worse at night in	3
„ „ „ in the day in	4
„ „ „ when cold in	2
„ „ „ „ hot in	4
„ „ „ „ resting in	0
„ „ „ on movement in	7

The action of the actæa in some of the most chronic cases was very marked; it appeared indeed to give relief at once.

The following are fair examples of its utility:—

May 27, 1872.—S.W., a female, aged 40, was admitted a patient at the Kensington Dispensary. She has had pains in the loins for six months, which are worse in the day and on exercise; heat and cold make no difference. She cannot stoop or rise from her chair without great pain. Catamenia regular. Urine at times very highly coloured. Pulse, 96, regular. \mathcal{R} Tinct. actææ 3ss, aquæ 3j, ft. haust. ter die sumend.

May 30.—Pain is much better than it has been for months; she can now stoop with ease. She suffers from some headache after the actæa. Pulse, 84, regular.

June 6.—Pain quite gone, but suffers a little from backache at times.

June 10.—Quite well.

June 20.—S.R., male, aged 60, was admitted a patient at the Kensington Dispensary, suffering from pain in the left lumbar region, which was of some weeks' duration: it made its appearance after an accident. The pain was worse at night when hot and on movement. Pulse, 76, regular. \mathcal{R} Tinct. actææ 3ss, aquæ 3j, ft. haust. ter die sumend.

June 24.—The pain has shifted from the left loin to the left hip. Pulse, 88, regular.

June 30.—Quite well: feels better than he has done for months.

The actæa was administered in the form of the tincture, the dose being 3ss. three times a day, except in the case of two children, T. W. and J. P., in which the dose was \mathcal{M}_x and \mathcal{M}_{xx} , respectively increased to \mathcal{M}_{xx} and \mathcal{M}_{xxx} . In four cases the dose was increased to 3j, but only one of these cases was relieved.

Unpleasant symptoms caused by the drug were noticed in six cases. They were, giddiness, headache, nausea, vomiting, and irregular pulse; these at once ceased on discontinuing the drug.

Diminution of the pulse has been mentioned as one of the effects of actæa, but I have not noticed this to be the case.

It is very important to use a freshly prepared tincture, as old preparations lose much of their efficacy.

I have also treated several cases of gout with actæa, but I have not found it of any benefit in these cases.

THE INFLUENCE OF THE NERVES ON NUTRITION.

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PART II.

CONTINUING with the cases which seem to favour the views of Samuel in regard to the existence of trophic nerves, we have next to mention the lesions of nutrition which follow section or disease of the fifth pair of nerves. The results of section have been described by many physiologists, and their experiments show that the immediate effects of section of this nerve, whether performed in front of the ganglion Gasseri, or through the ganglion itself, or through the trunk behind the ganglion, are loss of sensation over a great part of the head, face, and tongue of one side, loss of power in the muscles of mastication, and interference with some of the reflex acts of deglutition. In addition the eyeball protrudes, the iris becomes strongly contracted, and the palpebral conjunctiva flushes. In a few hours after the operation the vessels of the bulbar conjunctiva begin to dilate, forming a well-marked circumcorneal zone. A discharge of thick puriform mucus takes place from the eye, which, drying, glues the lids together. A few days after the operation the cornea begins to be hazy, then becomes opaque, and often presents ulcerations that Schiff contends are produced by the accidental and forcible removal of scabs of dried mucus, which carry away with them the superficial laminae of the softened membrane, and which, deepening, lead to perforation, escape of the humours, and atrophy of the globe. Schiff describes the cornea as in some instances sloughing out *en masse*. The iris is usually inflamed and covered with lymph, and the aqueous is turbid with flocculi.

The results of disease closely resemble those of section.

There is the same congestion of the conjunctiva, with purulent discharge, followed by haziness, opacity, ulceration and perforation of cornea, iritis, and atrophy of the globe. The vitreous and lens usually remain unaffected. In addition to these symptoms exhibited by the eye after section of the fifth, the mucous membrane of the nose becomes highly congested, secretes much mucus, and in some cases undergoes ulceration. Ulcers also appear on the mucous membrane of the lips and tongue. Death commonly occurs in a few days. The influence of the nervous system, or rather of the failure of the nervous supply, is here well marked, whether we explain it as direct or indirect.

Another remarkable instance of disease associated with alteration of nerve-trunks is afforded by the cases of leprosy described by Dr. Vandyke Carter.¹ Here the most distinct changes in the nutrition of the skin were observed, which were often limited to certain nerve regions; and post-mortem examination showed that the nerves in question were chiefly the cutaneous and superficially-placed trunks, and that these were enlarged, and presented hypertrophy of the interstitial connective tissue. As the cutaneous affection commences with anæsthesia, it seems probable that the nerves are *primarily* affected.

Most of the lesions of nutrition hitherto mentioned, it will be observed, relate to the integuments, but it is in the case of the muscles that the most marked changes are witnessed after section of the nerves supplying them, and which are therefore believed to furnish evidence that these nerves exert a direct trophic influence. When a motor nerve is divided, the muscle to which it is distributed undergoes atrophy, and the changes which take place in it have been described with great minuteness by M. Vulpian (Brown-Séguard's Archiv, 1872, p. 753). The fibres, he says, easily break up into blocks, those remaining unaltered retaining their ordinary transparency, or presenting a slightly clouded appearance from the presence of very fine granules, of which some are of a proteinous nature, whilst others are oily. The transverse striæ, though perceptible enough, are nevertheless not so well defined as in health; and M. Erb, who has described these changes very exactly, adds that they are sometimes more closely approximated than in the healthy state. The same

¹ "British and Foreign Med.-Chir. Review," January 1863.

peculiarity has also been noticed by M. Laborde. The cells lying beneath the sarcolemma, or in the substance of the fibres, are usually multiplied, and there is a similar multiplication of the cells of the sarcolemma; moreover, there is hypertrophy of the elements of the interstitial connective tissue separating the muscular fasciculi from each other. A certain number of these elements, and of those of the sarcolemma, become transformed into fat cells.

The vessels of atrophied muscles undergo no remarkable alterations. M. Vulpian, however, states that in some instances he has observed hypertrophy of the tunica adventitia.

In studying transverse sections of muscles atrophied in consequence of section of the nerves, Vulpian found that the atrophy was not quite uniform throughout, but that certain groups of fibres only underwent degeneration.

A considerable time elapses—as much as two, three, or four months—before the fatty degeneration becomes visible to the naked eye; appearing in the first instance in the form of faint striæ, and afterwards as well-marked bands. It is a noticeable fact that the fatty degeneration described by Vulpian is not of the muscular fibres themselves, but that the deposit of fat is interstitial, and situated in the connective tissue and sarcolemma corpuscles.

Extreme atrophy of muscular tissue may result not only from contusion, section, or other injury of the nerve supplying it, but from idiopathic centric nervous lesion, as is well shown by the case recorded by Drs. Radcliffe and Lockhart Clarke, where the spinal cord was alone diseased. Here there was granular degeneration chiefly affecting the anterior cornua, *i.e.* the motor columns, which would seem to indicate that this (if any) part presided over the nutrition of the muscles, and would lead us to exclude the intervertebral ganglia. Atrophy may also result from spinal meningitis producing cortical sclerosis.

Finally, there is the wide subject of the action of the nerves upon the nutrition of the glands, which has scarcely as yet been fairly investigated, but from which it cannot be doubted that strong arguments could be drawn tending to support the doctrine that the nerves directly influence nutrition. It is impossible here to do more than allude to the artificial production of diabetes

and the effects of the section of certain nerves in causing an increased excretion of urea.

A good experimental instance of the production of atrophy in a gland from section of its nerves is afforded by the testis. In Nélaton and Obolensky's experiments, the gland began to diminish in the course of three weeks subsequent to the division of the nerves, and after the lapse of three or four months was reduced to a very small size. The seminal tubercles were found to have disappeared, and both the testis and epididymis to be reduced to a mass of connective tissue and fat. The vas deferens was normal, and in one case the permeability of the blood-vessels was satisfactorily established. Doubtless many other instances might be collected.

I have thus far adduced some of the chief facts that seem to tell in favour of Samuel's views. I shall now endeavour to point out the principal arguments that are opposed to them, and to show how other explanations may be advanced of the phenomena observed. And first let me observe, that we are so accustomed to make use of the term "nutrition" as a broad and general expression, that it is only when we attempt to analyse it or to picture to ourselves the mode in which it is accomplished in any simple case, that we recognise how imperfect our conception of the process really is. Take for instance one of the least complex of all the tissues of the body—cartilage. Here, in the earlier periods of its development, we have a number of cells filled with protoplasm possessing a very few large blood-vessels, separated by wide intervals from each other, and no nerves; yet this tissue can take up the materials effecting the thickening of its cell walls, the substance called chondrine, which differs from any known constituent of the blood, and which must therefore be assimilated by the tissue, molecule by molecule, from the albuminous or other analogous constituents contained in the liquor sanguinis, as this slowly percolates through its interstices.

Or, again, take the case of another simple tissue—fat. The adipose tissue consists of a congeries of cells well supplied with blood-vessels, but having, so far as we know, no nerves distributed to the several cells. These when first visible are formed of a thin albuminous wall, and are filled with a finely granular

protoplasm. In this protoplasm oil-molecules soon appear, which, coalescing, form the oil-drop that ultimately fills the cell. But whence come the oil-molecules? Do they separate from the blood, and, either dissolved or suspended in the alkaline fluid which occupies all intertextural spaces, traverse the wall of the oil-cells; or, do the albuminous contents of the cells break up into oil and some secondary compound containing the nitrogen, which being dialysable, is carried off? And in either case, how can the process be influenced by the few and remote nerves otherwise than through the vessels? Through these, indeed, the nutrition of fat may be powerfully influenced, but surely not directly.

But we might take a still simpler instance—a white blood-corpuscle. How should we proceed to explain and describe the phenomena of its nutrition? All that we know respecting it can be compressed into a very few words. We know that it is a minute mass of protoplasm floating in an alkaline and albuminous fluid. In this it must certainly grow, and, having attained its full size, maintain itself for some time; how is this accomplished? It would seem probable that the albuminoid compounds of which it is constituted, being exposed to the oxygen absorbed by the blood during its passage through the lungs, are decomposed into such secondary oxidized compounds as creatine and creatinine, whilst the place of such oxidized molecules is taken by fresh particles of albumen. Why fresh albumen should be taken up, in what form it is taken up, why when assimilated by the white corpuscle it should acquire a contractile property which it did not previously possess, we cannot pretend to give any satisfactory account. It is to be remarked, however, that all this is accomplished in entire independence of the nervous system. We can neither admit that the white corpuscle has any nervous structure in its interior, nor that the nervous system distributed to the blood-vessels can exert any direct influence upon this chemically complex and actively moving body. If the nervous system act upon it at all, it can only be indirectly, by modifying the quality of the fluid in which it floats.

We have spoken of cartilage and fat as feebly innervated tissues, though the processes of nutrition are duly, and in the

case of the latter even actively, performed in them ; but much stronger ground may be taken upon the phenomena of nutrition as exhibited by the entire vegetable kingdom. Simple as the construction of the tissues of plants is known to be, and completely destitute as they are of any trace of a nervous system, there is yet ample evidence that nutrition and the processes which minister to it—as absorption, assimilation, circulation, the fixation of new material and the disintegration of the old, growth, secretion, multiplication, nay, even movement in response to a stimulus—can be performed with extraordinary energy and activity.

But again it may, I think, be shown that the so-called trophic nerves do not spring from the cerebro-spinal nor from the sympathetic centres, and that they do not run in either the ordinary sensory or in the ordinary motor nerves. That they can have but little relation with the great nerve-centres as the brain and spinal cord is sufficiently demonstrated by the fact that the child in utero can undergo full development without the presence of those parts of the nervous system. I do not know, and cannot discover, whether in these cases the intervertebral ganglia have been looked for and found, or the reverse. Considering the importance of the sympathetic system in regulating and maintaining the action of the heart and the contraction of the arterial system, it seems highly probable that these ganglia would be developed even in an anencephalic foetus, and their presence therefore could in no wise be regarded as solving the question of the presence or absence of a trophic nervous system ; but the perfect nutrition of every tissue in the body, the brain and spinal cord being absent, must be deemed a satisfactory proof that, however these organs may correlate the functions, and indirectly therefore the nutrition, of the different organs of the body, their maintenance in a healthy state by the assimilation of new matter and the elimination of the old, is conducted in entire independence of them. The same lesson is taught by the well-known experiments of Flourens upon the effects of removal of the brain ; whilst there are many cases on record where the most serious injuries of the brain have even in man occasioned no serious nutritive changes in other parts of the body. Brown-Séquard, again, remarks that he has

not remarked any constant or definite changes after section of the spinal cord in the nutrition of the parts lying behind the section.

It does not appear to be unreasonable to argue that if the process of nutrition in any organ be dependent upon the nervous system, section of the nerves supplying it should in all instances lead to failure of nutrition; but daily experience demonstrates in the most unequivocal manner that this is not true. Thus many authorities might be cited to show that complete excision of a sensory nerve certainly does not constantly produce any change in the nutrition of the sensory surface, except perhaps of the corpuscula tactus. To take one case only.

In the year 1866, M. Vanzetti¹ excised a portion of the lingual nerve on the left side, for neuralgia, in a peasant woman of Legnano, aged 45 years. Some improvement followed, but the pain returning, a fresh portion was excised in February 1868, which wrought a complete cure. In May 1870 the patient's condition was, that she had absolutely lost tactile and gustatory sensibility on that side of the tongue, though this had perfectly preserved its normal *form, colour, and nutrition*.

In such a case as this, even supposing the tactile and gustatory corpuscles to have been atrophied, these constitute but a small part of the whole sensory surface, and we must still ask how is the nutrition of the mucous membrane and the subjacent connective tissue maintained? It cannot be said by the hypoglossal, for this nerve has also been divided, and beyond the atrophy of the muscular tissue no alteration has been noticed in the mucous covering of the tongue either in man or animals. Brown-Séquard in his "Archives" likewise (1869) gives many cases where sensibility was lost over a large surface of one limb, yet where no alteration either in its nutrition or temperature was observed.

In the same paper he records cases where the motility was almost lost in one limb whilst the sensibility was retained; yet here also no trophic changes were observed.

That the so-called trophic nerves do not run with the sympathetic fibres or take origin from the sympathetic ganglia, seems to be sufficiently demonstrated by the effects of section of the sympathetic fibres or ablation of the ganglia. Instead of impaired we get improved nutrition. Section of the sympathetic

¹ Brown-Séquard, *Archiv. de Physiologie*, 1872, p. 152.

on one side causes the hair to grow more rapidly in the mammal, the comb of the cock to hypertrophy on that side, and, in consonance with the freer and fuller supply of blood, injuries to heal more rapidly, and the tissues, as in the case of the cornea, to be more tolerant of irritation and external lesion.

I find in the *American Journal of Medical Science* (October 1870) and *New York Medical Journal* (No. 69, p. 579), Dr. Carnochan and Dr. Conner advocate the removal of Meckel's Ganglion for neuralgia of the second branch of the fifth pair of nerves, and they actually record quite a number (13) of successful cases, and no reference is made to any trophic changes as occurring afterwards. The only conclusions that can be drawn are either that this nerve contains no trophic nerves, or that if it do the nerve was not divided. Considering the dissection requisite to expose it in the dead body, this is not altogether an inconceivable event. J. L. Prévost (Brown-Séquard, Arch. 1868, p. 213) also cut away the spheno-palatine ganglion in dogs, with no appreciable result upon the nutrition or functions of the parts supplied. But granting for a moment that these ganglia were removed, or taking those cases where the superior maxillary has been undoubtedly divided, at its exit from the orbit, for neuralgia, there appears to be no evidence that the skin of the face or the mucous membrane of the gums undergoes any material trophic change. Must we, then, consider that the facial nerve innervates the skin? Apart from anatomy, the records of many cases of operation on tumours near the neck of the jaw prove the contrary. To adduce one only:—

In a remarkable case described by McClellan, of Philadelphia (*American Journal of Medical Science*, October 1872), the entire parotid gland was extirpated in order to remove a fibroid tumour in that region. In executing this the external carotid artery was tied, whilst the facial, the pneumogastric, and the spinal accessory nerves were divided without any ill result whatever.

Samuel, in explaining and applying his theory, maintains, as I have already pointed out, that the trophic disturbances which result from any irritation are due to the exaggeration of the action of the trophic nerves. "The sudden increase in the action of the trophic nerves," he says, "beyond their ordinary physiological action, occasions a rapid development of all

the nutritive processes throughout the parts to which they are distributed. Acute irritation of these nerves gives birth to a series of abnormal products, simply because it accelerates to the highest degree the nutritive processes. The tissues suddenly tumify, the cells increase rapidly, they divide and multiply, and hence the formation of new structures which no longer resemble the parent one. We are accustomed to name this *tout ensemble* of phenomena *inflammation*."

M. Onimus, in commenting upon these statements, observes (Rev. Sci., 1871, p. 245):—"Indeed! are we to call inflammation only exaggerated nutrition? Are we to admit that the augmented action of the nerves which preside over nutrition produces, not more active phenomena of normal nutrition, but serious disturbance of nutrition and rapid destruction of the elements of the tissues? To exaggerate the nutrition of an organ, then, is to bring about its complete destruction in two or three days. This theory really calls to mind the old idea that diseases were due to excess of health." It may just be remarked, that certain rapidly growing tumours have little or no sensibility, and appear to be very imperfectly supplied with nerves, if at all.

The question now arises whether the phenomena observed after the section of certain nerves can be explained by referring them not to the direct action of the nerves upon the constituents of the tissues, but to an indirect action exerted upon the capillaries, or rather upon the smaller arteries, veins, and lymphatics. In reference to this point I would call attention to one or two physiological experiments that have lately been made. The researches of Ludwig and Hafiz have demonstrated¹ this important fact, that the vaso-motor nerves supplying the vessels distributed to a given muscle may have a totally distinct origin and course from the proper motor nerve of the muscle. Thus, whilst the biceps femoris receives its motor nerves from the sacral plexus, its vaso-motor nerves come from the lumbar plexus through the crural nerve, and accompany branches of the femoral artery to the muscle. Additional evidence of this is afforded by an experiment recorded by Bernard, showing² that, even if an artery be divided, irritation of the vaso-motor nerves will cause the peripheric part of the artery and its branches to contract, thus demonstrating the existence of

¹ Arbeiten, 1870, p. 93.

Lectures, Rev. Sci. 1872.

anastomosing fibres coming from remote parts. The motor and vaso-motor nerves can therefore be irritated separately.

I need scarcely point out how important this is as affording an explanation of variations in the phenomena of the circulation in certain parts leading to atrophy, diminution of temperature, and reflex paralysis. Ludwig and Hafiz's experiments further show that the nerves supplying vessels distributed to muscles are easily exhausted, and that when they are exposed for any length of time to high blood pressure the vessels *contract* with great energy. How influentially paralysis of the vaso-motor nerves operates on the extra vascular or interstitial circulation is well brought out by the experiments of Moreau. This observer made three loops of intestines in dogs which had been kept fasting for twenty-four hours, by placing four ligatures at equal distances round a portion of the small intestine. The nerves of the middle loop were searched for and divided. In the course of a few hours this segment was found to contain a large quantity of a strongly alkaline fluid, whilst the two others were dry and empty.

Bearing these facts in mind, it seems possible to explain many of the phenomena observed after injury to a large nerve, without recourse to the hypothesis of the existence of an entirely separate system having the nutrition of the tissues for its exclusive function. The first effect of injury to a mixed nerve is active congestion of the smaller vessels with considerable elevation of temperature, obviously due to paralysis of the vaso-motor nerves. After a time one of two things occurs: either the vessels undergo contraction, or they remain passively congested. In the former case, pallor from insufficient blood-supply, low temperature, inadequate nutrition as shown in the atrophy of the muscles, the friability of the hair, and the desquamation of the skin, are observed; in the latter case we see persistent congestion with local disturbances both subjective and objective, blueness and swelling of the fingers and toes, phlyctenulæ, whitlows, abscesses, inability to resist external temperature, burning pain, &c.

It may be remarked that many of the symptoms described as occurring in the extremities after injuries of nerves, closely resemble those observed after more or less prolonged exposure to cold; and as in the latter case we must dismiss the idea of the trophic centres being paralysed, it will be interesting to

compare the phenomena in the two cases. Now, if cold be applied suddenly, and be very intense, the smaller vessels become permanently contracted, no more blood flows through the part, and its nutrition is at once arrested; in other words, the finger, toe, ear, or nose may be killed by such rapid freezing. The eschars which form after certain nerve-injuries seem to be comparable to this in the suddenness and completeness of the loss of vitality induced. But if the action of the cold be somewhat less intense, we observe blueness of the skin, due to the tardy circulation of the blood through the vessels and consequent carbonisation, and this again is due partly to the small supply transmitted to the organ by the arteries, and partly to the obstruction to its return through the contracted veins. Then the part swells from the transudation of the fluid contained in the congested vessels, phlyctenulæ filled with serum or bloody serum rise, and the epithelium giving way, a raw surface or ulcer penetrating to a greater or less depth results.

Is not all this exactly comparable with what takes place in injuries of nerves as described by Weir Mitchell, Hayem, Charcot, and others? Yet would anyone call in the aid of trophic nerves, or consider that the *nerve-centres* were implicated, in the case of chilblains and vesication from cold?

Another difficulty that presents itself to the doctrine of trophic nerves is the limited extent of the nutritive changes observed when the nerve supply of a part is cut off, as in some of the cases already alluded to. Why does not the whole cheek, the whole eye, the whole limb, ulcerate or mortify? Why should there only be an ulcer here or an eschar there? Upon the other hypothesis it is explicable enough. Few vessels, probably, and no main trunks, receive their motor filaments from one and the same source, but this does probably occur with the smaller vessels, and these, becoming over-congested, cease to convey a current of blood, and hence local inflammation, eschars, ulcers, and the like.

To my mind a very strong argument against the existence of trophic nerves is the fact that after section of the fifth pair of nerves on one side of the head, if the sympathetic nerve of the same side be divided, the usual symptoms of trophic disturbance following the former lesion are completely prevented from occurring; proving almost incontestably that they are merely the

result of altered blood supply. It is remarkable also that the results of section of the fifth are by no means constant, and whilst they are often absent if the animal be highly fed, they are almost certain to ensue if it be enfeebled.

Even in Majendie's time the trophic changes occurring after section of the fifth were attributed to the entrance of dust and other foreign bodies into the now no longer sensitive eye. These the animal makes no attempt to remove by blinking, nor do they occasion any reflex flow of tears. This view was supported by the experiments of Snellen, who, drawing down the ear of a rabbit, made it into a shield for the protection of the eye, and found that no inflammation then followed the section of the nerve. The experiments were, however, so far unsatisfactory that it does not appear Snellen ascertained by post-mortem examination that he had completely divided the nerve, and it is known that a very small segment escaping injury will serve for the protection of the whole organ. Schiff, repeating Snellen's experiment, showed that a distinction must be drawn between mere congestion of the vessels and ulterior changes in the tissues. Congestion of the conjunctiva palpebrarum and iris are immediate consequences of division of the fifth, even when the animal is kept in the hand, and therefore cannot be regarded as the result of the entrance of foreign bodies into the eye or of accidental grazes of the surface by the paws or other objects. Schiff, moreover, found that no inflammatory mischief was set up when the orbicularis palpebrarum was paralysed and the eyelids were consequently kept widely apart by the action of the levator palpebræ, nor after extirpation of the lachrymal gland, which otherwise has now often been performed in the human subject without notable ill effects. On the other hand, the conjunctiva bulbi became much less congested when the eye was protected, the purulent secretion was much less, and the cornea was comparatively slightly and only partially affected, in one instance (the animal, however, only living till the fourth day) remaining entirely unaffected.

Büttner and Meissner¹ some years ago undertook a repetition of Snellen's experiments, protecting the eye on the side where the section of the fifth had been made, by a blinker, partly made of leather, partly of glass. They found that in those cases where

¹ 1862, Bericht.

the whole trunk of the fifth or the ophthalmic branch alone had been divided by a single clean cut, and the blinker had formed a complete protection to the eye against the intrusion of foreign bodies, as dust and hairs, there was not the slightest subsequent disturbance in the nutrition of the parts, even after the lapse of many days. As soon, however, as the blinker was removed, hyperæmia rapidly supervened, succeeded by haziness of the cornea and the usual train of symptoms.

V. Bezold (Deutsch Klinik, 1867), observed cases of paralysis of the fifth in man, and found that in him as well as in rabbits in which the fifth had been divided, very careful protection of the eye was effective in preventing inflammation of the eye, and in checking it when it had commenced.

V. Hippel, as well as V. Gräfe (1867), regard drying of the exposed surface of the cornea in cases of lesion of the fifth as an influential exciting or predisposing cause to inflammation. I may also remark that in a case of paralysis of the fifth, lately under my care in St. Bartholomew's Hospital, in which one eye was wholly lost, and the opposite eye from the extension of the intracranial affection became inflamed, the inflammation was long limited to the part of the cornea exposed in the half-shut condition in which he usually kept the lids. In this part a deep ulcer formed, whilst the rest of the cornea was perfectly bright and transparent, and the iris was not implicated.

The fact that the intervertebral ganglia have been found inflamed in herpes, as stated by Bärensprung, Hutchinson, and others, does not appear to be sufficient to found a theory of trophic nerves. It is possible the inflammation may have been preceded by some sensory irritation, and may therefore be of a reflex nature. At all events we have a right to ask what caused the inflammation of the ganglion. It is possible it may be a consequence instead of a cause of the cutaneous lesion.

I must acknowledge, however, that great difficulties stand in the way of explaining the changes that take place in muscles after the division of their nerves, and that no satisfactory explanation can be given of the process of fatty degeneration that occurs in them after such section. There seems, however, good reason for believing that it is merely the result of disuse, the tissue, when in full action, forming oxidised compounds which are easily conveyed away by the blood traversing the tissue, but

when absolutely quiescent, as after section of the nerves, forming imperfectly oxidised products of disintegration, of which oil is the most conspicuous. This view is at least supported by the results of Dr. Reid's experiments, which showed that if the nerves distributed to two limbs be divided, and the muscles of one limb be left at perfect rest whilst the other is passively fixed and extended several times in the course of the day, the former set will undergo atrophy, whilst the latter retain their normal size, weight, and structure. This seems to me a very weighty argument against the doctrine of trophic nerves as far as regards muscle.

I would also suggest another point that seems to me to have been overlooked, namely, the action of the nervous system upon the lymphatic trunks. It would lead me too far were I to enter into any description of the relations of the lymphatics to the blood-vessels; but the larger ones are known to possess muscular tissue in their coats, and they certainly carry off the surplus liquor sanguinis or lymph which has escaped from the blood-vessels. Suppose that they contracted when the vessels did not, what would be the effect? Might we not have the same tumefaction, the same tendency to serous infiltration, proceeding to the formation of abscesses, whitlows, eschars or gangrene, and the like.

Differences in the nature of the tissue will clearly afford some explanation of the different effects resulting from section of the vaso-motor nerves: where the vessels run through compact tissue, the paralysis of their muscular coat will cause but a trifling alteration in the volume of blood passing through them, and lead to only slight changes in the nutrition of the part; whilst if the tissue be lax and yielding, the vessels will become greatly distended, and exudations of various kinds will readily take place.

Schiff makes the important observation that slight causes of irritation which lead to congestion in healthy parts are without effect when applied to those having the vaso-motor nerves paralysed, but that if the irritation be increased in degree, great congestion occurs in the latter with purulent or plastic exudation, though in the former no such results are witnessed.

I may add that many of the best physiologists, Bernard and others, are slow to accept the theory of trophic nerves; and Dr.

Mitchell, who has paid great attention to this subject, makes the important admission that the phenomena of nerve-wounds, as he has seen them, lend no conclusive support to Samuel's theory ; and there are in them, as in many other pathological facts, certain arguments in favour of the possibility of disorders of nutrition being capable of production by irritation of the ordinary nerves of sensation, and indeed of motion.

I may briefly recapitulate the arguments which I consider to hold good against the view of the existence of special centres and nerves, apart from the vaso-motor system, having for their function the maintenance of the nutrition of the several organs and tissues of the body, and which when irritated increase the nutrition, and when paralysed diminish it.

1. We have the broad fact that the whole vegetable kingdom, with all its varieties and complexities of structure, its very variously modified cells and fibres, capable of performing both slow and rapid movements and of producing the most varied secretions, is absolutely destitute of any nervous system whatever.

2. It can easily be shown that, even in the highest animals, certain parts of the body, as the white corpuscles of the blood and adipose tissue, the whole group of connective tissues, including fibrous tissue, tendon, cartilage, and bone, are thoroughly well nourished throughout life, with appropriate pabulum drawn from the blood, yet have little or no relation to nerves.

3. Numerous cases are on record showing that anencephalic monsters—*i.e.* children destitute of brain and spinal cord—are capable of attaining foetal maturity, and are consequently capable of maintaining their nutrition at the highest point. This shows that if there be separate trophic nerves and centres, these must exist in, or at least be represented by, the sympathetic ganglia and nerves ; but these are already known to be essentially vaso-motor.

4. The whole nervous supply of a part may be divided, yet, if the supply of blood be not interfered with, and the part be not exposed to injury, no failure of nutrition occurs.

5. Many heterologous growths which develop rapidly, as cancer, recurrent fibroid, are not known to possess any nerves.

6. We have a sufficient explanation of some of the phenomena of nerve lesion in the known effects of irritation and

paralysis of the vaso-motor nerves upon the vascular system; whilst in other instances it would simply seem that the paralysis of the nerves supplying a given part, whether motor or sensory, leads indirectly to failure of nutrition in consequence of the abolition of its functional activity; the cases of trophic disturbance in muscles, however, being much more frequent and obvious than those where the sensory nerves of the skin or of the motor glands are affected.

7. It is difficult to explain why the lesions of nutrition should be local and limited if the primary nerve lesions affected all the nerves supplying a part.

In conclusion, therefore, it appears to me that whilst we must admit that the nervous centres possess a powerful influence over the nutrition of the various organs and tissues of the body, the evidence we at present possess tends to show that such influence is not exerted directly in modifying the molecular changes, or what we may call the physical operations of nutrition, but indirectly, either by regulating the supply of blood, or still more remotely by influencing the functions of each organ.

Amongst the various papers bearing upon this subject the reader may refer to Dr. Handfield Jones, in "St. George's Hospital Reports," vol. iii. 1868; Dr. Rolleston, in the *Quarterly Journal of Science* for April 1870; Mr. Jonathan Hutchinson, in the "London Hospital Reports" for 1866; and in particular to the *Archives de Physiologie* of M. Brown-Séquard for 1870, 1871, and 1872.

[The very great importance to therapeutics of this question, as to the channels by which the influence of the nervous system upon tissue-nutrition is conveyed, will easily be perceived. The hope of discovering scientific and intelligible rules for guidance in the employment of many important remedies, and especially *electricity*, depends largely upon our coming to a decision upon this matter; and in the meantime I believe that therapeutic results can throw a certain amount of light on the physiological question. I propose, therefore, to bring forward, in our next number, some arguments which tend to modify some of Mr. Power's conclusions.—F. E. ANSTIE.]

THE GEOMETRICAL METHOD IN MEDICINE.¹

BY JAMES ROSS, M.D.

"SYSTEM," says Ueberweg, "is the orderly combination of mutually related knowledge into one relatively complete whole. Science is a whole of knowledge in the form of the system; *scientific propositions* and *system* are related to each other as *content* and *form*. But the right form is necessary to the content. Science, as such, has its true existence only in the systematic form."² But it is also true that the body of doctrine which constitutes an art can only exist in some systematic form. When entering upon the discussion of medical doctrines, Broussais says: "Les théories ne sont que des déductions de faits plus ou moins bien exécutées; et les systèmes, que des arrangements méthodiques de ces déductions."³ Our knowledge can never consist of separate propositions. Whether it exists for its own sake without any ulterior object, as in science, or is required for the achievement of a practical end, as in art, it is equally true that it must be reduced to some kind of methodical arrangement. Therapeutics, therefore, like all other branches of knowledge, must assume some systematic form; and it is for us to determine the *best form* to which our therapeutical know-

¹ It is unnecessary to mention, except for the pleasure of paying homage to a great thinker, that this title was first suggested to me, and that the entire article is inspired, by Mr. Mill's chapter 'On the Geometrical Method' in his "System of Logic."

² "System of Logic and History of Logical Doctrine," by F. Ueberweg, translated by Mr. M. Lindsay, M.A., F.R.S.E., p. 540.

³ "Cours de Pathologie et de Thérapeutique générales," par F. J. V. Broussaie. Deuxième édition, tome premier, p. 6.

ledge can be reduced for the purposes of the art. I have endeavoured to set forth my own views, in a general way, with regard to the true method of therapeutics in previous numbers of this journal;¹ and in the following article I propose to notice briefly one or two systems which I consider to be very defective. I shall offer a few remarks upon that method which endeavours to systematise therapeutics on the type of geometry. Geometry is a science of pure *form*. It proceeds by definitions, axioms, and postulates; and by the induction of the fourth proposition; but, as Mr. Mill remarks, it "affords no room for what so constantly occurs in mechanics and its applications, the case of conflicting forces; of cases which counteract or modify one another."² Those who have employed the geometrical method in the concrete sciences commit the error of supposing that the phenomena of the science can be deduced from one law or force, and not from the laws of all the forces concerned in their production. The subjective condition which corresponds to this objective mistake may, as Mr. George Henry Lewes remarks, be called the *Spirit of System*.³ The errors which result from this tendency of human nature Bacon calls the Idols of the Tribe. "The human understanding," he says, "from its peculiar nature, easily supposes a greater degree of order and equality in things than it really finds; and, although many things in nature be *sui generis* and most irregular, will yet invent parallels and conjugates and relatives, where no such thing is."⁴

The influence of this defective method is apparent throughout the whole of the first period of modern philosophy. "Think, moreover," says M. Cousin, "that Descartes, after having proclaimed the analysis of thought as the true point of departure of philosophy, scarcely took his first step ere he borrowed the process of geometry. The great thinker departed from thought; the great geometrician threw over thought the form of geometry."⁵ The system of Spinoza, and that of

¹ See *Practitioner*, Nos. 34, 38, 43.

² "System of Logic," Fifth Edition, vol. ii. p. 472.

³ "Biographical History of Philosophy," by G. H. Lewes, art. "Bacon."

⁴ Bacon's "Novum Organum" (Bohn's Library), edited by J. Devey, M.A., p. 391.

⁵ "History of Modern Philosophy," by M. Victor Cousin; translated by O. W. Wright; vol. i. p. 198.

Leibnitz, especially as elaborated by Wolf, are good examples of the results obtained by this method in philosophy. Leibnitz, for instance, took his departure from the notion of substance. He conceives it to be living activity or active force. As active force, substance is essentially an excludent power (repulsion); and before this power can come into exercise, substance must be a *personality*, an *individuum*, or a *monad*; and there must stand opposed to it *individua*, or a plurality of monads. Having by a definition of substance and two syllogisms arrived at the conclusion that there is a plurality of monads which constitutes the elements of all existence, Leibnitz makes this the foundation of his philosophy, and endeavours to deduce from it the phenomena of the whole physical and spiritual universe.¹

But it is more interesting for our purpose to notice that in the transition of several of the sciences from the empirical to the scientific stage an attempt was made to explain the phenomena by the geometrical method. Descartes employed this method in his physics as well as in his philosophy. For the solution of the constitution of the material universe he sought no other data than Matter and Motion. The matter he required possessed no properties except extension, impenetrability, and inertia. He postulated that this matter filled all space, and that its parts, both great and small, were endowed with motion in an infinite variety of directions. From this definition and these postulates he deduced his famous hypothesis of Vortices, by which he

¹ It is scarcely necessary to add that I do not consider the endeavour which some philosophers have made to verify our knowledge by arriving, through a complete analysis, at a substantive proposition upon which a rational synthesis may build up, as an example of the geometrical method. I have Mr. Herbert Spencer's philosophy particularly in view at present; but a similar conception not only unconsciously underlies every system of philosophy, but was explicitly expressed by Plato in the "Republic." I transcribe the passage as quoted by the late Dean Mansel in his little work on "The Philosophy of the Conditioned." Plato speaks of "that second segment of the intelligible world, which reason itself grasps by the power of dialectic, employing hypotheses, not as principles, but as veritable hypotheses, that is to say, as steps and starting-points, in order that it may ascend as far as the unconditioned, to the first principle of the universe, and having grasped this, may then lay hold of the principles next adjacent to it, and so go down to the end, using no sensible aids whatever, but employing abstract forms throughout, and terminating in forms." The geometrical method fails chiefly because it consists mainly of synthesis without being preceded by a complete and searching analysis.

endeavoured to account for all the complicated motions of the heavenly bodies. Descartes, therefore, conceived that the motions of the heavenly bodies resulted from one force alone, namely, that of impulsion ; but the Newtonian theory showed that these motions were the result of a conflict between this force and that of gravitation. As Sir James Mackintosh remarks, "Sir Isaac Newton reformed Physics, not by simplifying that science, but by rendering it more complicated. He introduced into it the force of gravitation."¹ I wish to draw particular attention to this point, because the prominent position occupied by gravitation in the Newtonian theory has led some to think that astronomy is a deductive science founded upon one law, instead of being founded upon at least two laws, namely, the law of gravitation and that of inertia. This mistake has led some to wish for a law which will be to therapeutics what the law of gravitation is to celestial mechanics ; while others boast that they have already discovered a law of drug selection which has placed therapeutics upon a scientific basis on the type of astronomy. I shall not at present insist upon the mistake committed in endeavouring to found an art like therapeutics on the type of a deductive science ; what I wish to point out is the fundamental misconception ; which is formed of the method of astronomy. The law of gravitation can no more explain the motion of a planet than it can explain the parabola described by a terrestrial projectile without the concurrence of the impelling force.

The influence of the geometrical method may be traced in the history of geology as well as in that of astronomy. I may refer to Sir C. Lyell's account² of the famous controversy between the Vulcanists and Neptunists as a notable example. The former attributed almost all geologic changes to volcanic action, while the latter thought that they were principally caused by aqueous precipitates. The tendency of the disputants on each side was to attribute more to the action of one force than the facts of the science warranted ; and consequently they had to distort some facts and reject others in order to accommodate them to their

¹ "Ethical Philosophy," by Sir J. Mackintosh, edited by Whewell, Fourth Edition, p. 206.

² Lyell's "Principles of Geology," Ninth Edition, p. 48 *et seq.*

theoretic conceptions. Adam Smith's "Wealth of Nations" is modelled to some extent on the geometric type. He first notices that the greatest improvement in the productive powers of industry was the effect of the division of labour. He then shows that the division of labour originated from individual self-interest. "It is not," he says, "from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest."¹ He then proceeds to show that the division of labour is limited by the extent of the market; from this he traces the origin and use of money; until in this manner he exhibits the entire subject of which he treats as a series of deductive propositions from one general premise. It is true that at each step of the argumentation something emerges in the conclusion which was not implied in the original premise. This shows, not that the conclusions arrived at were false, but that the superstructure was reared upon too narrow a foundation. This method has also been adopted in politics; the interest-philosophy of the Bentham school being one of the best examples. "The profound and original thinkers who are commonly known under this description," says Mr. Mill, "founded their general theory of government on one comprehensive premise, namely, that men's actions are always determined by their interests."² Although Mr. Mill is, after his illustrious father, the most distinguished of Bentham's disciples, he criticises this theory very carefully, and, with his usual love of truth, exhibits its shortcomings; but I must refer anyone interested in the subject to his own lucid pages.

But of all the applications of the geometrical method, that which interests us most is its use in Ethics. Ethics and therapeutics have many points in common; the former is the science of *right* conduct, the latter the science of *right* treatment of disease; and as the one must look upon *wrong* as the correlative of *right* conduct, so must the other notice *wrong modes of treatment* as the correlative of a *right method*. In both cases, therefore, there must be a *standard of right*, or a *criterion* by which we can distinguish it from *wrong*. The standard of morality is

¹ "Wealth of Nations," by Adam Smith, LL.D., F.R.S., p. 27.

² "System of Logic," by John Stuart Mill, Fifth Edition, vol. ii. p. 474 *seq.*

very variously expressed, the greatest happiness of the greatest number being generally adopted by modern moralists; although many of them would not accept the criterion of utility without considerable reservations and explanations which need not be mentioned here. The standard of right treatment in medicine is the attainment of health. It is true that in practice we must be satisfied with much less than health; but this is not inconsistent with its attainment being regarded as the criterion of right treatment. Neither absolute morality nor absolute health has any actual existence; both are ideal conceptions, the one of which assists us in attaining to the highest possible degree of relative right living, and the other to the highest possible degree of relative health. But there is one other point in which ethics and practical medicine should agree. Theory in the former emerges in a code of precepts for the regulation of the conduct, and ought to emerge in the latter also in a similar code for the regulation of the treatment of disease. These rules, whether of morals or of medicine, must be deductions from laws of nature; but the rules themselves are not susceptible of the application of the deductive method. These remarks will show how important it is to notice briefly the various applications of the geometrical method in ethics before proceeding to examine its employment in medicine.

Thomas Hobbes stands at the head of modern moralists. He adopted individual self-interest as the basis of his *Ethics* and *Politics*. It is of course out of my province to criticise the system of Hobbes, except in the modified sense in which it may be of use to us in our subsequent criticism of systems of medicine. One great objection to Hobbes' system, or to any other founded upon *self-love*, is that this principle is not original, but derived. As Sir Jas. Mackintosh says, "Self-love is altogether a secondary formation; the result of the joint operation of reason and habit upon the primary principles. It could not have existed without presupposing original appetites and organic gratifications."¹ The inadequacy of this principle as a basis for morals may be seen from the expedients which Hobbes was driven to adopt in order to save the consistency of his system. He cannot allow the existence of disinterested passions; therefore

¹ "Ethical Philosophy," by Sir Jas. Mackintosh, p. 119.

he is forced to define those which are generally allowed to be such in terms of self-interest. "So resolute was he," remarks Hallam, "to resort to anything the most preposterous, rather than admit a moral feeling in human nature."¹ According to Hobbes, "Pity is the imagination of future calamity to ourselves, proceeding from the sense of another man's calamity. Love is a conception of his need of the one person desired."² It is a sufficient indication of the deficient foundation of Hobbes' system when a man of his mental calibre can only save his consistency by taking refuge in such manifestly erroneous definitions. But consistency, when once obtained, frequently passes for truth; and this system exhibited such complete congruity that even its opponents for close upon a century did not discover the falsity of its foundations. The Rational moralists—Cumberland, Cudworth, Clarke, and Shaftesbury—endeavoured to render morality disinterested by tracing it to reason as its source; but they still continued to regard self-love in some form as the great principle which prompts men to action. Butler endeavoured to rescue ethics from the structural rigidity of former systems; but soon afterwards another attempt was made to deduce morality from one elementary proposition. It has already been noticed that Adam Smith adopted the geometrical method in his political economy; and this is the method he adopts in his "Theory of the Moral Sentiments." Butler and others derived sympathy from benevolence; but Smith inverted the order, and derived benevolence from sympathy. "Sympathy," says Smith, "may be made use of to denote our fellow-feeling with any passion whatever."³ This fellow-feeling with passion Adam Smith makes the foundation of his ethics; and although he has done great service to philosophy in developing the actings of this impulse, his system is necessarily defective, and even a man of his genius and candour is driven to various expedients, such as overlooking some facts and distorting others, in order to maintain an apparent consistency.

Having now traced, though briefly and imperfectly, the application of the geometrical method in philosophy, in some of the sciences, and in ethics, let us examine these systems as a whole.

¹ Hallam's "Literature of Europe," Second Edition, vol. ii. p. 481.

² See Mackintosh's "Ethical Philosophy," p. 65.

³ The *Essays* of Adam Smith, p. 11.

What objections may be urged, not against one only of these systems, but against all of them? Generic objections will not only be useful to us when we come to criticise geometrical systems of medicine, but they will be much more trustworthy than specific objections. In some cases we find that the principle at the foundation of the system is ultimate; and so far no objection can be urged to it. Descartes' theory of the celestial motions is an instance of this kind, since no account can be given of compulsion which does not presuppose its existence. In other cases, however, the fundamental principle of the system is secondary, and a further analysis ought to have traced the ultimate principles upon which it rests; and these ultimate principles, when it is possible to ascertain them, should have been made the basis of the system. But the most fatal objection to every body of doctrine organised by the geometrical method is that the foundations are too narrow. The consequence is, that there must be a region of truth lying beyond the legitimate bounds of the system of which it can take no cognisance. In all instances we find various expedients adopted to bring this region within the limits of the system. The result is, that sometimes consistency is obtained at the expense of truth, as in Hobbes' "Ethics," while at other times truth is obtained at the expense of consistency, as in Adam Smith's "Wealth of Nations." But, as Mr. Mill remarks, "it is not allowances that are wanted. There is little chance of making due amends in the superstructure of a theory for the want of sufficient breadth in its foundations. It is unphilosophical to construct a science out of a few of the agencies by which the phenomena are determined, and leave the rest to the routine of practice or the sagacity of conjecture. We either ought not to pretend to scientific forms, or we ought to study all the determining agencies equally, and endeavour, so far as it can be done, to include all of them within the pale of the science, else we shall infallibly bestow a disproportionate attention upon those which our theory takes into account, while we mis-estimate the rest, and probably underrate their importance."¹ It will be seen that geometrical systems are narrow and defective, but not on that account entirely erroneous. Such systems have both a positive and a negative aspect. It is not only asserted

¹ Mill's "System of Logic," Fifth Edition, vol. ii. p. 479.

that the phenomena may be deduced from definitions and one or two general premisses, but it is implied that none of the phenomena can be deduced from other principles except those enumerated and their derivatives. It is frequently in the negative aspect of the system that errors can be most distinctly recognised, and hence it has been remarked that systems are true in their positive assertions, but false in their negations. With these general remarks we shall proceed to trace the applications of the Geometrical Method in Medicine.

It could not fail to have been observed at an early period in the history of medicine, that a great many diseases tend naturally to health. A generalised expression was given to these observations, which, like many other such expressions, was made to include a reference to the reigning philosophy of the day. There was supposed to dwell in the human body a power, sometimes called Nature, at other times Rational Soul, Archæus, or Anima, which directs the functions of the body, and is capable of correcting its morbid deviations. Nature was regarded as the physician of diseases, and the care of curing the patient devolved upon it. When this conception is made the basis of medicine, it leads to the expectant method of treatment. We have already seen that a complete system of ethics has been built upon one general premise, but a physician is not only a philosopher who can sit in his study and evolve a system, but he has also daily to combat disease practically at the bed-side. It may therefore be expected that, as a general rule, systems of medicine have less consistency than those of ethics, and exhibit more of the practical expedients by which the rigidity of the system is evaded. Hippocrates, for instance, was very little trammelled by this principle in his practice. His practice depended in a great measure upon observation, and his aphorisms are empirical generalisations from his experience. The *vis medicatrix naturæ* was with him merely a practical maxim which prevented him from rash and ignorant interference during the progress of disease. Yet his contemporaries accused him of being inactive in his treatment, and called it a "meditation upon death." A similar accusation was brought against the treatment of Stahl, who substituted the Anima in place of the Nature of Hippocrates. Gideon Harvey wrote a work entitled "*Ars curandi Morbos Expectatione*," to

which Stahl replied in a work which he called "*Ars Sanandi cum Expectatione*." The practical conclusion at which Stahl arrived is thus expressed by Sprengel:—"Pour que la médecine puisse être mise au nombre des arts humains, il faut que celui qui la professe soit actif; mais lorsque les mouvemens vitaux sont réguliers, énergiques et bien dirigés, on doit se garder de les troubler en aucune manière."¹ Stahl is not content to be a passive spectator of disease; but he is not certain how or when to interfere, and he ultimately extricates himself from the difficulty by appealing to the Divine Benevolence.² Those who maintain the theory in our own day, but who are not content to adopt the expectant treatment, evade the difficulty by representing the function of the physician to be to *assist* Nature. This subsidiary hypothesis is conjoined to the humoral pathology, and to Nature is ascribed the function of eliminating the poison. This expedient allows the practitioner to introduce into his system all sorts of hypotheses with regard to disease and to the action of remedies. The eliminative treatment has, however, been recently the subject of so much controversy that I shall not criticise it further.

The history of the humoral pathology affords many examples of the application of the geometrical method. Humorism, as expounded by Galen, was founded upon the theory of the four elementary fluids; so that his pathology was more a hypothesis than derived from a single generalisation. The main indication of treatment, however, was to alter the quality of the fluids of the body; and his therapeutics may be said to depend upon one principle. In order to fulfil this indication recourse was had to venesection, cathartics, sudorifics, and diuretics; measures which were supposed to alter the consistence of the blood, or to remove from it morbid matter. When the humoral pathology became amalgamated with the principles of the Chemiatic School, better examples of the results of this method were afforded. The system of Professor Sylvius de la Boe is probably the most notable instance. He saw no change in the human body which was not the consequence of fermentation, a process which had

¹ "*Histoire de la Médecine*," par Kurt Sprengel, vol. v. p. 224.

² "*Sileni Alcibiadis*, i.e. *Ars Sanandi cum Expectatione opposita Ars Curandi nudâ Expectatione*; *Satyra Harveana Castigata*," page 312: Parisiis, 1730.

not then been distinguished from simple effervescence. He believed that diseases were caused by acrid substances, of which there were two classes, the acrid and the alkaline. Sprengel's remarks:—"Négligeant la cause proprement dite de l'altération de l'effervescence, et de la prédominance des âcretés, n'ayant non plus aucun égard à l'action des solides, il ne voyait dans le corps humain qu'un magma d'humeurs continuellement en fermentation, en distillation, en effervescence, en précipitation, le médecin était rabaissé par lui au niveau d'un distillateur ou d'un brasseur."¹ His system of treatment was perfectly in accordance with these principles. The acridities might be moderated by narcotics, the effervescence of the bile combated by purgatives and diaphoretics, the acid rendered innocuous by alkalies, the alkalies neutralised by acids.²

This article is already more than sufficiently long, therefore cannot at present trace the further applications of the geometrical method by the Chemiatic School. In a future paper I shall, with the editor's permission, sketch the far more important and elaborate systems constructed by the Solidists, consciously avowedly upon the type of Geometry.

¹ "Histoire de la Médecine," par Kurt Sprengel, vol. x. p. 63.

² See "Compendium der Geschichte der Medizin," von Dr. B. Hirsch, page 231.

ON MIGRAINE.

BY WILLIAM DALE, M.D. LOND., PLYMOUTH.

HAVING read with considerable interest the articles on Migraine which have lately appeared in the *Practitioner*, I cannot withhold my own experience, which, being personal and long-continued, may be of some value in the discussion of the subject. My note shall be brief; nevertheless the case shall be fully stated.

From the age of twelve years or earlier, up to within four or five years of the present date, or until I was upwards of forty years old, I have been a great sufferer from migraine, or, as we are accustomed to call it, "bilious headache." I do not recollect the frequency of the attacks in the earlier part of my life, but I may say for twenty years I had them once a month at least, and for nine or ten hours the pain and distress they gave rise to were almost unbearable.

The commencement and course of an attack were, with rare exceptions, strikingly unvaried. When I awoke after a good night's sleep I felt slight pain in the head, sometimes amounting to nothing more than heaviness over the eyebrows, and sometimes only a peculiar disorder of vision, giving rise to an appearance as of a portion of a venetian blind quivering rapidly close to the eyes, though no venetian blind was in the room. From these symptoms I too well knew the attack was upon me. The pain in the head gradually increased as the day advanced, generally being diffused over every part, so as not to be localized at all, and at other times perhaps just as frequently being confined to one or both eyebrows, which were then tender to the touch; but in the worst attacks the pain was internal, and there was no soreness externally. Towards noon I usually

began to feel some nausea, and often vomited some intensely sour fluid.

This vomiting I encouraged by drinking lukewarm water freely ; and by five or six o'clock in the evening I at length vomited two or three teaspoonfuls of *frothy mucus*, and as if by magic my sufferings terminated, and except some amount of debility I was quite well again. Very often I had a warning of what was coming on the preceding day, in a feeling of being exceedingly well, or, to put the thing in the most expressive way, it was a feeling of never having been so well in one's life.

As regards the etiology in my case, which is the chief object I propose to myself in these remarks, I have always blamed the stomach—always believed it to be, in almost every instance, the *fons et origo* of the malady. I have, during the whole of my life, been very moderate and cautious as to diet, but if by chance, and because nothing else was in the way, I have taken a dinner of hot and fat meat, more especially pork, mutton, or gross hashed meat, I have paid the penalty in a headache of more or less severity next day. I am also very temperate as regards intoxicating beverages, all my life using beer, wine, or spirits very sparingly ; but whenever I have been tempted to go out of my usual course and use things in excess—excess, in my case, being easily reached—viz. three or four glasses of wine, or a single tumbler of spirit and water, I might almost invariably expect a visit from my watchful enemy next day.

Nothing, for instance, would more effectually floor me than going out to supper and partaking of the various dishes usually set before you on such occasions, with the addition of two or three glasses of wine, or a glass of spirit and water to finish with.

This is “a plain unvarnished tale;” and if experience can teach one anything, I think it teaches that, in my case at all events, the cause of the affection was a diseased stomach, and that all the rest of the symptoms were—neuralgic, if you will—but purely reflex in their character.

My professional experience, also, in other similar cases, has led me to the same conclusion. I therefore go further than Dr. Allbutt when he says, “migraine is not a mere trigeminal pain, with ‘cerebral’ vomiting, but that it is a complex affection in

which abdominal and cephalic disorders go hand in hand, and in which treatment addressed to the former set of morbid events is at least as important as that which is addressed to the latter ;” and contend that in many instances, at least, the cause of the headache is to be found in the disorder of the stomach, the nature of which seems to be but little understood. The secretion of the gluey *poisonous* fluid, which I have examined again and again without any definite results, and the almost magical effects of its expulsion from the stomach, appear to bear out my opinion.

But I must confess there are two or three things in immediate connection with my attacks which my view of the case fails to explain, namely, the unusual exuberance of spirits the preceding day, and the fact, not mentioned before, that any anxiety, overwork, or worry made the existing causes (not food, wine, &c.) more certain in their operation ; yet even this does no more than serve to show that our knowledge of causation in disease is still imperfect.

As respects treatment during the attack : in my own case, perfect rest in bed, and fasting, were at last the only remedies ; for I tried many things at first, and for several years, without deriving the least benefit from them. This is also my experience as regards others ; but of course, in the intervals of the attacks, all disorders of the system should be looked after, and all known exciting causes should be carefully shunned.

It only remains for me to add that, to my exceeding great comfort, for the last five years or so my old enemy has left me, or at least he has only given me the very slightest intimations of his existence.

[In the next number I shall offer some comments on Dr. Dale’s interesting case, in which I shall try to show that a different conclusion from his own ought to be drawn from the facts.—F. E. ANSTIE.]

Reviews.

De la Fièvre traumatique : Thèse présentée au Concours. Par le Dr. J. LUCAS-CHAMPIONNIÈRE, Ancien Interne et Lauréat des Hôpitaux. Paris : J. B. Baillière et Fils, 1872.

ONE of the natural consequences of a bloody war like the Franco-German conflict of 1870 is a revival of interest in everything that pertains to the after-treatment of wounds, and especially in surgical fever. Dr. J. Lucas-Championnière (who is honourably known as one of the editors of the excellent *Journal de Médecine et de Chirurgie pratiques*) has made this malady the subject of a thesis for the "Concours d'aggrégation," which deserves to be read with care.

The author's object is to trace out the clinical history of traumatic fever pure and simple, *i.e.* uncomplicated with pyæmia; and to this end he has carefully analysed a large number of cases, more especially with regard to the course of the temperature. Moreover, he discusses, very lucidly, the opinions of the principal pathologists, and points out, with a clearness which to ourselves, at any rate, is very instructive, the boundary lines between the different schools of pathology in regard to this very question. The general tendency of the facts and arguments which he brings forward may be described as the exact reverse of that theory which accounts for all surgical fevers by some degree of septicæmia. Our author draws out the clinical chart of simple surgical fever with a clearness which is very convincing: he shows that, whether more or less severe, the uncomplicated affection has a physiognomy of its own, and which is perfectly distinct, on the one hand from true pyæmia, and on the other from violent secondary inflammatory fever.

One of the most instructive portions of the book is the author's commentary on "Milk Fever," an affection which he classes very decidedly with the simple traumatic fevers, reckoning it as a natural, if not a necessary, consequence of the uterine wound. His remarks, also, upon the "fièvre urineuse" will be found very suggestive, especially just now, when everyone is discussing the nature of the constitutional effects produced by such operations as that of lithotrity. And the chapters on prognosis and on treatment, which might be supposed to have the greatest interest

for our readers, really fulfil that expectation, notwithstanding their disappointing brevity, because they are the outcome of clear logical thought based on very careful observation. We have no space to illustrate this by quotations, but we would draw attention especially to the sensible and impartial manner in which he regards the so-called "Antiseptic" system of Lister. Altogether this book (of less than 180 pages, of which eight are occupied with a laboriously compiled bibliography of surgical fever) is well worth the study of every pathologist and of every practical surgeon.

Dictionnaire des Practiciens. Table analytique du Journal de Médecine et de Chirurgie pratiques. Par LUCAS-CHAMPIONNIÈRE. First Series, from 1830-49. Second Edition. Paris, 1872. Price 10s.

Dictionnaire des Practiciens. Second Series, 1850-69. Edited by JUST LUCAS-CHAMPIONNIÈRE and PAUL LUCAS-CHAMPIONNIÈRE. Paris, 1872. Price 11s.

THESE two volumes form the record of a very useful industry. When the first M. Lucas-Championnière founded the journal above named, he very probably scarcely ventured to think it would exist for forty-four years and then be found highly flourishing; but this success has been deserved by the diligent and faithful manner in which the editorial duties were always discharged by himself and his successors. The collected and analysed records of the first forty years of this period are here presented to us, and to a very considerable extent they realise their title of the "Medical Practitioner's Dictionary." It cannot be said that they are completely cosmopolitan in their survey of the progress of practical medicine, and English authorities might especially complain, if they cared to do so, of the scant notice which their works have received. But that is an old story; and we have reason to believe that young medicine, in France, is making great progress in acquaintance with foreign languages and with the scientific works written in those languages. And certainly, as regards the medical literature of France itself, these analytical records will be found to be singularly complete. It will be well worth while for any practitioner to procure these two volumes, and put them into a good serviceable binding, for reference; as they contain a large number of practical hints that will serve for every-day use.

Ueber den Einfluss des Kristallischen und des amorphen Chinins auf die weissen Blutzellen u. den Eiterbildungsprocess. VON DR. G. KERNER, Frankfurt a. Main.

THIS pamphlet contains some interesting further information on a topic which we must ask to be forgiven for mentioning so

frequently, on the ground of its deep interest for scientific therapeutists. The author of the pamphlet now before us does not in the least exaggerate the importance of the discovery made by Binz and his pupils at the university laboratory at Bonn. The declaration that quinine is above all things a "Protoplasma-gift," and that it is capable of restraining or annihilating the vital movement of white blood-cells and other amœboid bodies, is one of the most weighty events in the whole history of therapeutic investigation. It is not to be wondered at if Dr. Kerner, who himself *pars magna fuit* in this interesting investigation, should feel jealous for the honour of his school, and unwilling to admit any disparagement of the researches of himself and his friends without the strictest criticism of his critic. A somewhat formidable assault was recently directed by Dr. Geltowsky, in the pages of the *Practitioner*, against the idea that the power of quinine as a protoplasm poison could be safely employed in the treatment of inflammatory fevers, suppuration, &c.; in which the object was to limit the number and the movements of white blood-cells or pus cells. To this Dr. Binz himself speedily replied in our pages; and now Dr. Kerner, one of the most distinguished of Binz's pupils and *collaborateurs*, puts forward a detailed answer to Geltowsky's criticisms, which includes many new and interesting facts.

The chief point of Geltowsky's paper was the apparent proof that quinine does not act upon white blood-cells with poisonous energy unless it is present in the proportion of $\frac{1}{2,500}$ the weight of the blood with which it is mixed, and that any such proportional quantity absorbed into the blood of a human being would probably prove fatal, since it had been experimentally proved to be fatal to certain animals. But it would appear from the criticisms both of Binz and of Kerner, that Geltowsky had been seeking for an altogether unnecessary degree of the non-poisonous effect upon the corpuscles: he expected nothing short of their complete reduction to a state of motionlessness and, in fact, death. Such a degree of action was never expected or desired by Binz or his pupils; and they have repeated, and proved by fresh experiments, that so small a proportion of quinine to blood as 1:4,000 will produce the changes in the corpuscles which they aim. They have also shown that another criticism on their experiments, which has been advanced by several writers, was inapplicable. It had been alleged that a large portion of the diminution in the migratory movements of the corpuscles, produced by quinine, might probably be ascribed to its influence upon the activity of the heart's propelling power; but both Binz and Kerner have shown that they had taken care to eliminate this possible source of fallacy. A third criticism of Geltowsky's—that Kerner had experimented only on the blood of cats—is shown by the latter

to be based on a mistake; as, in fact, Kerner had also experimented on dogs' blood.

In addition to his answers to Geltowsky's observations, Kerner now publishes some fresh and very interesting observations. The subjects were frogs. In a first research, comparison was made between three frogs, of which the first was curarised, and the mesentery exposed to the air so as to excite inflammation, which was allowed to run an unchecked course; the second was curarised and its mesentery exposed, but had also an injection of crystallised quinine; the third was treated like the second, except that amorphous muriate of quinine was substituted for the crystalline salt. The results of this research were incomplete, as too large a dose of quinine had been used, and the animals all died. In the second research, the same comparison was instituted, but more cautious doses were used; and here the beneficial inhibitory action of both the crystalline and the amorphous quinine was manifested, without any deleterious complication. In a third research, the progress of unchecked inflammation in one frog was compared with its course in two other frogs which were treated with amorphous quinine-muriate locally applied to the mesentery: this measure, when applied alone, was found to have but a partial and incomplete effect. As a general result of the researches, it would appear that the amorphous quinine is equally or even more energetic than the crystallised salts. It would appear, moreover, from Kerner's observations on animals and on himself, that it can be used subcutaneously without producing any local bad effects. Its great solubility and cheapness are, of course, very strong additional recommendations.

Revue des Sciences Médicales en France et d l'étranger. Redigé par GEORGES HAYEM. No. 1, January 15, 1873. Pp. 448. To appear quarterly. Price £1 10s. annually. Paris: Masson.

WE heartily congratulate our French neighbours on the appearance of what promises to be a most excellent and useful serial publication. It is somewhat remarkable that France has so long been without a really complete medical retrospect, extending to the works of foreigners equally as to those of Frenchmen. We need say no word in compliment to the very able physician and pathologist who assumes the editorship, for he is widely known as one of the chief ornaments of the medical profession in his country. From the style in which the first number is executed, it is evident that M. Hayem must have secured the services of a very competent staff of fellow-workers—indeed, many of the names appended to various sections are already well known to those who study French medical literature.

On the whole, this new undertaking appears to give every promise of success, and it will certainly be well worth while for English medical men to avail themselves of its stores of collected information. To many who cannot read German, the French quarterly will open a new access to much of the continental medical literature; for we may state that impartial justice is done to the Medicine of all countries.

Clinic of the Month.

Treatment of Hooping Cough.—Dr. Berry, of Lancaster, in a letter addressed to the *Medical Times and Gazette*, observes that in regard to all or most of the remedies employed in the treatment of hooping-cough, the words of Dr. Bateman can be endorsed by practitioners who have had only a moderate experience of this disease. He says: "Perhaps there is no disease for which so many specifics and infallible nostrums are promulgated with confidence, or so few actual remedies known."

Dr. Berry does not pretend to introduce any new remedy for this distressing affection, but desires to speak of one which is simple, safe, and, he thinks, apparently valuable in the treatment of uncomplicated hooping-cough. He has found dilute nitric acid, in doses of from five to fifteen minims, according to age, with simple syrup, given every three or four hours, to alleviate the cough and spasm, and apparently cut short the disease. During a recent epidemic he prescribed this frequently, and has every reason to be satisfied with it. Whether the result has been *propter hoc* or not, he is not prepared to answer, but the cures have certainly been *post hoc*, in the cases in which he employed it; neither does he offer any suggestion as to the *modus operandi* of the remedy, but he believes its action to be that of a tonic, sedative, and antiseptic. He thinks, however, its refrigerating properties should not be lost sight of.

In all the cases Dr. Berry has treated with dilute nitric acid, he has paid attention to the state of the digestive organs, and, in such cases as have required it, he has given an aperient combined with an alterative. There is one advantage in the use of a remedy like this for children: unlike hydrocyanic acid, it is safe, and no unpleasant results need be dreaded from its administration. At the same time it is inexpensive: a consideration in cases in which a large quantity of medicine is likely to be required. (*Medical Times and Gazette*, Feb. 8, 1873.)

Laurel Leaves as a Febrifuge.—M. A. Doran has communicated a note to the French Academy recording the febrifuge and antiperiodic properties of the leaves of *Laurus nobilis*. The

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green leaves are prepared by drying them at a gentle heat in a closed coffee-roaster, to avoid the loss of the volatile constituents, until they become brittle, but without undergoing any alteration. They are then reduced to a fine powder, of which one gramme, macerated in a glass of cold water for ten or twelve hours, is administered as a dose. (*Pharmaceutical Journal*, No. 130.)

Valerian as a Remedy in Diabetes Insipidus.—Dr. Bradbury, of Cambridge, reports a case of Diabetes insipidus in which the most marked benefit resulted from the employment of valerian in doses of fifteen grains thrice daily, a remedy that was first recommended by Trousseau. On admission (Sept. 1) the patient was passing sixteen and a half pints of urine daily, and his weight was 9 st. 5½ lb. He commenced to take the powdered valerian on the 5th September, in fifteen-grain doses, three times a day. On the 11th September the dose was increased to twenty grains, and on the 1st October these were repeated five times a day, beyond which he could not take them without feeling sick. On the 3rd December his weight had increased to 10 st. 10 lb, though the medicine had been gradually left off, and he only passed three pints of urine a day. He continued to improve even after his discharge from the hospital. (*Lancet*, Jan. 11, 1873.)

Oxide of Zinc as a Remedy for the Diarrhœa of Infancy and Childhood.—Dr. Brakenridge states that during the last three years he has carefully tried various methods of treatment in many hundreds of cases of diarrhœa of infancy and childhood, at the dispensary of the Edinburgh Royal Hospital for Sick Children.

The considerations which have led him to adopt this remedy may be briefly stated as follows:—First, the disease depends chiefly on a weak and too impressionable state of the nerve-centres presiding over alimentary secretion; secondly, it is correlated to convulsions and other spasmodic diseases; thirdly, it is accompanied by hyperæmia of the secreting surfaces of the alimentary canal. To meet these indications we must have a remedy, which is firstly tonic; secondly, antispasmodic; thirdly, astringent. In the oxide of zinc we have these three properties happily combined. First: as a tonic, it has been said to be to the nervous system what iron is to the blood. Its usefulness in the analogous condition of profuse sweating is well known. Secondly: as an antispasmodic, it is deservedly held in high estimation, and has been found frequently to effect a cure in convulsions and other spasmodic diseases. It may, therefore, be depended upon to prevent the occurrence of those nervous diseases which stand correlated to diarrhœa as the alternative results of such irritations as dentition, worms, &c., and which

may supervene on the rude stoppage of diarrhoea by astringents. Thirdly: its astringent properties are well known. (*Medical Times and Gazette*, Feb. 1873.)

Value of Lithium Salts in the Treatment of Renal Calculus, Gravel, and Gouty Deposits.—Dr. Garrod remarks that now thirteen years have elapsed since the salts of lithium were introduced into medical practice as internal remedies; and for a period of nine years both the carbonate and citrate of the metal have been made officinal by being placed in the British Pharmacopœia: sufficient time has therefore elapsed for their value as medicinal agents to have been fairly established. Having introduced the lithium salts to the notice of the profession, and having had considerable experience of their action upon the system, and therapeutic value, he considers himself in a position to give some opinion upon their merits.

It may perhaps be of advantage, especially to those readers whose attention has not been directed to the subject, to point out some of the peculiarities of the salts of lithium, in order that their action and value may be more readily understood.

In the first place it may be stated that the oxide of lithium, as likewise the neutral carbonate, are strongly alkaline, resembling in this respect the salts of sodium and potassium, and hence the oxide of this metal is generally regarded as the third fixed alkali. Lithium is a metal far less commonly diffused than either sodium or potassium, and it received its name from its being supposed to exist only in a few minerals, and not either in the animal or vegetable kingdoms.

The distribution of the metal is however much more extensive than was at first supposed, and it is now capable of being detected, by the method of spectrum analysis, in the ashes of many vegetables, and in that of the blood itself, and likewise in many mineral waters. Minerals called triphylline, lepidolite, spodumene, and lithia mica contain it in quantities sufficient to render the extraction of the metal profitable. The salts of lithium commonly employed are carbonate and citrate; occasionally he makes use of a guaiacate of lithium for special purposes. The properties of lithium salts, to which attention may be now advantageously directed, are:—

1. *Their Alkaline Properties.*—The carbonate of lithium, although very sparingly soluble in water, forms a solution with a strong alkaline reaction. The corresponding salts of sodium and potassium are much more soluble.

The amount of alkalinity of the three salts, or their neutralising power for acids, differs greatly. The carbonate of lithium has the greatest amount of neutralising power; next comes the carbonate of sodium; and lastly the carbonate of potassium.

This difference depends on the equivalent of the respective metals, that of lithium being 7, of sodium 23, and of potassium 39: the lower the equivalent, the greater the neutralising power of the carbonate.

When in practice we administer these salts as direct antacid remedies—that is, for the purpose of arresting acidity in the stomach and intestines—we may consider their power to be in the inverse order of the equivalents of the salts. When the citrate of lithium is given, although it is difficult to state where decomposition takes place, we know that we find it in the urine as carbonate; and hence, although the salt possesses no direct antacid power, still it is equally antacid, as far as the urine is concerned, to the carbonate, when the amount of lithium in each salt is taken into consideration. Looked upon simply as either direct or remote antacid remedies, the salts of lithium possess no known properties which render them in any degree more eligible than the salts of potassium and sodium; and there are other considerations which render them less desirable, especially their high price.

2. *Action of Lithium Salts as Diuretics.*—If we examine the powers of the salts of lithium, sodium, and potassium, as regards their action upon the kidneys, we find, as far as their diuretic power is concerned, lithium stands by far the highest; sodium the lowest; potassium being intermediate. The power of lithium salts in increasing the urinary secretions, in many cases, is extremely marked; and some patients, to whom these preparations are given for other purposes than as diuretics, find it often inconvenient to take them in the latter part of the day, on account of the diuretic effects during the night.

3. *Peculiarities of Urate of Lithium.*—A very important characteristic of lithium as a medicinal agent is the solubility of the salt which it forms with uric or lithic acid, the urate or lithate of lithium being by far the most soluble salt of the acid which is known; in fact, it is the only salt of uric acid which can be looked upon as soluble to any great degree. As the inconveniences which uric acid or its salts cause in the system depend upon their very sparing solubility, leading to the formation of calculi, gravel, or gouty deposits, it can be readily understood that an agent possessing the powers of lithium would be likely to prove of considerable advantage in many diseases in which uric acid plays an important part. Although the exact solubility of the different salts of uric acid has not as yet been very carefully determined, yet there is no difficulty in showing the great solvent power of carbonate of lithium compared with the corresponding salts of sodium and potassium. It has, for instance, been found that the mineral lepidolite, in fine powder, when boiled with uric acid has the lithium extracted

from the silicic acid contained in it, and the urate of lithia formed. Again, when carbonate of lithia is boiled in a quantity of water insufficient for its solution, the addition of uric acid renders it soluble, proving that the urate is more soluble than the carbonate of the metal. To further illustrate the subject, it will be found, if we add to solutions of equal strengths of the three alkaline carbonates, at the temperature of the body, uric acid in the form of uric calculi, or in any other shape, that the lithium solution attacks it rapidly; the sodium solution very slowly and to a small extent; the potassium salts in an intermediate degree. To sum up, we may remark that lithium salts as simply antacid remedies offer no special advantages; that as diuretics they may, in cases in which saline diuretics are indicated, prove of much service; but that as agents to prevent the deposition of uric acid or its salts in the cavities or tissues of the body, they possess properties which may render them important medicinal agents. (*Medical Times and Gazette*, Jan. 25, 1873.)

On the Action of Mercury.—Dr. Farquharson states that he is reminded, by the unfortunate idiosyncrasy of a case recorded by Dr. Cheadle, of one in which severe symptoms were produced by a very small dose of mercury. A relative of his own spent many years in the West Indies, and was treated there for fever, according to the fashion of the day, with almost incredible quantities of calomel. Ever since that period she has been so susceptible to the action of that drug as to find it necessary, when consulting any fresh medical man, to lay her peculiarities in this respect fully before him. On arriving in London, she was seized with what is popularly called a bilious attack; and unluckily forgetting to make her usual stipulation, the doctor in attendance naturally enough prescribed a couple of pills, containing three grains of calomel and five of colocynth. Furious salivation almost immediately set in, with marked gastric disturbance and general debility; and several months elapsed before either her gums or her strength were restored to their normal condition. This lady's daughter exhibits an almost equal intolerance to mercury in any form; and Dr. Farquharson is thus led to infer that prolonged residence in a tropical climate may serve to encourage, if not actually produce, such a type of constitution. It is also known that debility has a decided tendency to cause excessive action of this therapeutic agent. Dr. Farquharson relates a typical instance of this which occurred in the Coldstream Guards' hospital. Some years ago, two privates having been salivated, one by three, and the other by two calomel vapour baths, each containing twenty grains, this naturally excited some surprise, as the men were robust, and as

such an accident rarely happened ; but all became clear when it was found that they had inadvertently been kept on very low diet during the four or five days following their admission. The rectification of this error speedily put them all right ; but the circumstance impresses forcibly the necessity of combining tonic diet and regimen with anything like a mercurial course. If the patients feed well, have a moderate allowance of stimulant given them, with iron or quinine, they will fatten and do well ; whereas the semi-starvation enjoined by the dogmas of former days proved its fallacy by the results. With syphilis as the whip, and mercury as the spur, patients went downhill with sad rapidity, and not a little of this must have been due to the debilitating influence of low diet.

M. Diday tells us ("L'Histoire Naturelle de la Syphilis") to beware of the action of mercury in persons with light or reddish hair. (*British Medical Journal*, Feb. 8, 1873.)

Extracts from British and Foreign Journals.

Treatment of Aneurisms.—It is of some interest to know the opinions and practice of so distinguished a foreign surgeon as Prof. Billroth. In the sixth edition of his work on General Principles of Surgery, 1872, he describes the following methods:—1. Compression of the tumour itself. 2. Compression of the trunk above the tumour; and of the different modes of applying pressure he enumerates that with the finger, by forcible flexion, and that by various compressors, maniquets, &c. 3. Ligature of the artery by Anel's, Hunter's, Wardrop's methods. 4. Injection of various kinds, as chloride of iron and solution of ergotin. 5. Electro-puncture. Ablation of the entire swelling (method of Antyllus). In commenting upon these different methods Prof. Billroth remarks: sometimes one and sometimes another is to be preferred. As a general rule, however, in view of the very numerous and curable cases that have been reported from the employment of compression, he thinks this should be first tried, and not too long given up. When, as is usual in traumatic cases, the tumour is widely diffused, Antyllus' method, the complete ablation of the whole mass, is to be preferred. It is quite practicable with good assistants. If this plan be not adopted, no recourse must be had to Anel's or Hunter's method. Ligature of the larger vascular trunks would always be preferred as the best and simplest means for the cure of aneurism, but it is not that secondary hæmorrhage took place so frequently in the part ligatured. Professor Billroth suggests that some one may even yet be discovered which possesses the advantages without the disadvantages of the ligature. Injection with liquor is at least available in cases of spontaneous and traumatic aneurism. In aneurisma, varicosum, and varix aneurismaticus, ligature of the artery above and below the opening is the most certain means of cure. (*Billroth: Die Allgemeine chirurgische Pathologie und Therapie*, 1872.)

Tracheotomy performed by Galvano-Cautic Apparatus.—This proceeding was originally introduced into practice

by M. Amussat *filis*, in 1870, and was first performed on a boy aged thirteen. Dr. Amussat passed a curved needle carrying a double thread of platinum through the integuments, so as to embrace at the same time about two centimetres of the trachea in the loop. After the removal of the needle, he seized one of the threads with two forceps in communication with an electric battery, and made the section of the tissues comprised in the loop without hæmorrhage. The trachea being opened, the child coughed violently, and expelled the foreign body which was in the trachea, and for which the operation had been performed. A week subsequently the wound was healed, and the patient well. The first number of the *Archives Générales de Médecine* for 1873 contains a series of eight observations by different operators, the particulars being furnished by M. Bourdon. The operation as performed by M. Verneuil is as follows :—There are three steps : the incision of the skin and of the soft parts ; the incision into the trachea ; and the introduction of the canula. 1. After having marked with the nail the point which corresponds to the inferior border of the cricoid cartilage, the extremity of the blade of the instrument is pressed in and made to cut downwards to an extent corresponding to the diameter of the canula that is desired to be introduced, and the thickness of the soft parts covering the trachea. In the infant, the first incision, which is made with great rapidity, ought not to be made deeper than the skin, lest the trachea should be opened at the outset and there be a risk of cauterising it, if not of perforating its posterior wall. 2. The trachea being exposed, it should be seen that the wound corresponds to the middle line, and the point of the knife should be made to penetrate into the first interspace between the cartilages and the necessary number of rings divided. 3. The introduction of the canula is the last and easiest of all. This proceeding, it is obvious, differs considerably from that of M. Amussat, but in view of the difficulties that are presented by the adult when tracheotomy is required, M. Bourdon prefers the latter. (*La France Médicale*, Jan. 22, 1873.)

Turpentine in Idiopathic Erysipelas.—Dr. Leonardi reports a case of a woman, aged forty-two, whose health was generally good, and who slept in the open air. On awaking she experienced severe pain in her head and neck. On the following day she had a shivering fit, followed by fever, and erysipelas appeared in the neck. On the second day the chest was attacked as well as the ears, which attained an immense size. M. Leonardi, on seeing the patient, prescribed the application of oil of turpentine twice a day to all the parts affected, and some aperient medicine. At the end of three days the affected parts had

recovered their normal size, and the desquamation of the epidermis was the only trace of an attack of erysipelas so severe that it was at one time thought it would prove fatal.

He also gives another case of a scrofulous child, eight years of age, who, having been long exposed to the sun, began to suffer from pain over the whole right side of the chest. The next day the whole face was affected, and the nose and ears, greatly swollen, were covered with phlyctenulæ. The febrile symptoms were intense, the tongue dry, and all the symptoms of severe erysipelas of the face were present. Here, again, M. Leonardi prescribed embrocations of essential oil of turpentine twice a day, and internally some enemata with oil of turpentine. Several large lumbricoid worms were expelled, and on the fourth day the cure was complete.

The efficacy of applications of oil of turpentine, the author goes on to say, has been frequently verified in cases of traumatic erysipelas. The above cases show that it is equally serviceable in cases of spontaneous or idiopathic erysipelas. (*Gazette Méd. de Paris*, and *Journal de Médecine*, vol. lv. p. 316.)

The Histology of Croup.—Two papers have recently appeared upon this subject, one by Steudener in the 54th vol. of Virchow's *Archiv*, the other by Boldyrew in Reichert and Dubois-Reymond's *Archiv*; and the following observations are taken from an abstract of them which has recently appeared in the *Centralblatt für die Med. Wiss.* No. 40, 1872. Steudener's researches on the mucous glands of the larynx and trachea in croup show that in this disease the epithelial investment disappears more or less completely, whilst the mucous and submucous tissues, especially the former, are infiltrated with numerous small round cells, which, by their abundance, effect the compression of the vessels and the consequent pale aspect of the surface. The ducts of the glands are in like manner so compressed that the escape of the secretion is prevented, and considerable dilatation of the canals is produced. The cells of the acini are somewhat hazy and very granular. In the deeper and proportionately less affected layers, the vessels are dilated; though, in severe cases, even these may be obliterated, and the cell infiltration may dip down as far as to the connecting tissues surrounding the cartilage. As regards the croupous membrane itself, which is attached loosely to the mucous membrane now destitute of epithelium, it is composed of a felt-like substance containing many round cells. In the meshes of the former is a finely granular substance that clears up in acetic acid, a few epithelial cells, within which small round cells are invaginated. The epithelium does not appear to take any active part in the formation of the round cells.

When the disease has lasted some time, a finely granular degeneration of the cells and of the felt-like "cementing substance" sets in, which may terminate in complete fluidification of the membrane.

Boldyrew's observations and researches, undertaken with Boll, led to very similar results to those obtained by Steudener. They found also peculiar concentrically laminated spheroids, the centre of which was formed by a very fine particle of the granular mass.

Employment of Ergot by Midwives.—An important discussion on this subject has recently taken place in the *Académie de Médecine*, of which only the heads can here be given. It appears that M. Peyrussan addressed a note to the Academy, which was forwarded by M. Tarnier, to the effect that ergot often produced disastrous effects when prescribed by midwives, and that its use by them ought to be interdicted. The subject had been brought before the Academy twenty-two years ago by the Prefect of the Seine, on account of the large number of fatal cases that had occurred in Paris, but it was then considered that such interdiction could not be made compulsory, in view of the serious inconveniences to which it might give rise. M. Devilliers, who thought that prescriptions for ergot should only be made up when *visé*d by a physician, maintained that ergot might well be dispensed with in cases of hæmorrhage preceding or threatening abortion, as other means—bleeding, rest, opium—were equally successful. Nor was it of much use in hæmorrhage occurring when abortion had really taken place. It was then less valuable than refrigerants, plugging the vagina, &c. Again, hæmorrhage taking place in the more advanced periods of pregnancy is almost always due to placenta previa, and here again ergot proves of but little value. He scarcely appears to approve of it when used as an occitocic or hastener of uterine action, where this action is slow and feeble, and thinks it should even then be employed with great precaution and care. The only case where it was sometimes indispensable and could be administered without any danger, was in severe uterine hæmorrhage after delivery. Long experience had made him acquainted with many cases where the injudicious use of ergot had produced the death of the fetus or serious accidents to the mother, as rupture of the uterus, retained placenta, followed by purulent infection and death. M. Depaul corroborated M. Devilliers' statements, and stated that for the past twenty years he had been of opinion that midwives as a general rule should only be permitted to use ergot in cases of hæmorrhage after delivery from atomy of the uterus. It might, however, he thought, occasionally and with proper precautions, be used by them advantageously in breech

presentations. M. Jules Guérin considered that midwives should be better educated, and then the administration of ergot might safely be entrusted to their hands. He thought that ergot might often be advantageously employed in cases of atony of the uterus after delivery, and declared that M. Campbell, of Paris, was accustomed to prescribe ergot after every confinement to favour the retraction of the uterus. M. Poggiale remarked that it was considered by many that ergot was more dangerous in its results when improperly used than the forceps; but the law prevented *sage femmes* from using the forceps—much more, then, ought it to interdict the use of ergot. M. Blot only finds it useful in hæmorrhage after delivery. M. Tarnier, in summing up, gave the principal circumstances under which ergot might be used, and the Academy ultimately adopted certain regulations under which midwives might obtain ergot from pharmacutists, which procurement, it appears, was previously in contradiction to another French law prohibiting others besides medical men and veterinarians from writing prescriptions and having them made up. (*Bulletin de l'Académie de Médecine*, Dec. 17, 1873.)

Borax and the Nitrate of Potash in Loss of Voice.—

Dr. Corson, of Orange, N.J., states that some years since, while in charge of the class of “diseases of the chest and throat” in connection with the New York Dispensary, he was led, at the suggestion of a non-professional friend engaged in teaching elocution, to test the efficacy of borax and nitrate of potash in many cases of sudden hoarseness from cold, and the following are the conclusions at which he arrived:—

1. That in sudden hoarseness or loss of voice in public speakers or singers, from “colds,” relief for an hour or so, as by magic, may be often obtained by slowly dissolving and partially swallowing a lump of borax the size of a garden-pea, or about three or four grains, held in the mouth for ten minutes before speaking or singing. This produces a profuse secretion of saliva, or “watering” of the mouth and throat. It probably restores the voice or *tone* to the dried vocal cords, just as “wetting” brings back the missing notes to a flute when it is too dry.

2. Such “colds” may be frequently “broken up” at the very commencement; and this restorative action of the borax to the voice may be materially aided by promptly taking, the evening previous to a public effort, dissolved in a glass of sweetened water, a piece of the nitrate of potash, or “saltpetre,” a little larger than a garden-pea, or about five grains, on going to bed, and covering with an extra blanket. The patient should keep warm next day. This both moistens the dry throat and further relieves the symptoms of “cold” and slight blood-poisoning

from suppressed perspiration, by re-opening the millions of pores of the skin more or less closed by cold.

3. These remedies have the three recommendations of being easy to obtain, convenient to carry in travelling, and perfectly harmless.

4. They are nearly or quite useless in the actual cure of long-continued chronic diseases of the throat, or acute inflammation or "tonsillitis," both of which require other appropriate treatment. (*New York Medical Record*, Jan. 1, 1873.)

Treatment of Psoriasis.—Psoriasis is not in itself a serious disease, says M. A. de Montméja, but it is obstinate, and those who have once been affected by it are very liable to relapses. It is often hereditary, manifesting itself only when the adult period is reached, after which it may be either intermittent or inveterate. In the present state of our therapeutical knowledge, we must not imagine that we can effect a radical cure of psoriasis: we may clear the skin, or hasten the evolution of an attack, but it is impossible to prevent relapses. The treatment is divisible into local and general means. The general treatment consists in the administration of mild and frequently repeated aperients and of arsenical and sulphuretted preparations, as well as of those containing cantharides. M. Hardy prefers small doses of the arseniate of soda to the other preparations of arsenic. M. de Montméja has obtained considerable success from the employment of two drops of tincture of cantharides in a glass of eau sucrée, the dose being increased up to thirty drops per diem. Its use, however, requires extreme care and vigilance. Copaiva is sometimes very useful when given internally. In addition to these means, the waters, containing sulphur, of Saint Honoré-les-Bains, Barèges, Aix-en-Savoie may be tried, especially in inveterate cases. The local treatment that is found most beneficial is the application of vapour baths, and either warm alkaline or sulphurous baths, with ointments containing the empyreumatic oils. It is rare for sulphuretted oils to prove of any service, and if mercurial ointments are used, care should be taken when the scabs have fallen off, lest salivation be induced. The oil of Cade, with three parts of lard, is very useful. (*La France Médicale*, Jan. 15, 1873.)

Therapeutic Value of Bromide of Calcium.—Dr. Hammond remarks that bromide of calcium is a white crystalline substance, very soluble in water, and readily decomposing on exposure to the atmosphere for a few minutes. The aqueous solution is at first colourless, but it soon becomes tawny from a portion of the bromine being set free. Its taste is similar to that of the bromide of potassium, though somewhat more pungent and disagreeable. The dose is from fifteen to thirty grains or

more for an adult. It is especially useful in those cases in which speedy action is desirable, as, owing to its instability, the bromine is readily set free, and its peculiar action on the organism obtained more promptly than when either of the other bromides is administered. Chief among these effects is its hypnotic influence, and hence the bromide of calcium is particularly beneficial in cases of delirium tremens, or in the insomnia resulting from intense mental labour or excitement. In a number of instances a single dose has sufficed to induce sleep, a result which very rarely follows the administration of one dose of any of the other bromides. In those exhausted conditions of the nervous system attended with great irritability, such as are frequently met with in hysterical women, and which are indicated by headache, vertigo, insomnia, and a mental condition of extreme excitement, bromide of calcium has proved of decided service. Combined with the syrup of the lacto-phosphate of lime, it scarcely leaves anything to be desired. An eligible formula is—*R. Calcii bromidi ʒj; syrup. lact. phos. calc. ʒiv. M. ft. mist.* Dose, a teaspoonful three times a day in a little water. In epilepsy Dr. Hammond has thus far seen no reason for preferring it to the bromide of potassium or sodium, except in those cases in which the paroxysms are very frequent, or in cases occurring in very young infants. Of these latter, several which had previously resisted the bromide of potassium have yielded to the bromide of calcium. It does not appear to cause acne to anything like the extent of the bromide of potassium or of sodium. (*New Remedies: a Quarterly Retrospect*: New York.)

Treatment of Basedow's Disease—The three essential features of Basedow's disease are palpitation and frequent action of the heart, swelling of the thyroid gland, and exophthalmos. Its relations to chlorosis are obvious, as its occurrence in females chiefly, and its frequent association with irregularities after menstrual function, show. Nevertheless it occurs in men, and even in children. Drs. Eulenburg and Guttman, in speaking of the mode of treatment to be adopted, remark that whilst formerly tonics were very generally employed with the object of improving the blood, as well as remedies that lowered the action of the heart, notwithstanding that experience demonstrated how little benefit was to be obtained by these means, in recent times the cure of the disease has been attempted by applying continuous electrical currents to the sympathetic in the neck. Dusch, it appears, was the first who adopted this means in a case which had long been otherwise treated without effect, and found that the application of from 10 to 20 elements reduced the pulse from 130 to 70, and even to 64 in the minute, the exophthalmos at the same time undergoing considerable diminution. MM.

Guttman and Eulenburg tried the same means in 1867 found that in a woman suffering from the disease, and having a pulse-frequency of 108 to 130, with unusual tension of the carotids, galvanisation of the cervical sympathetic with a weak ascending current of only six or eight elements, a gradual fall of the pulse-frequency took place from 124 to 84, and to 70, with coincident diminished tension in the carotid and radial arteries. This plan of treatment, however, was not continued long enough to cause much diminution in the size of the tumour of the thyroid or of the exophthalmos. Since they have applied the current in four other cases, and in all with effect of ameliorating the cardiac symptoms, but in none enough to cause material improvement of the other symptoms. Chvostek has made numerous experiments on galvanisation of the sympathetic in these cases, and in no less than thirty of them has nearly effected a complete cure. In his hands the influence on the gland was well marked, whilst it was less marked on the activity of the heart. Moritz Meyer also reports four cases where the thyroïdal tumour was by the same means almost entirely abolished. (*Die Pathologie des Sympathicus*, Eulenburg and Guttman, 1873.)

On a New Mode of Treatment of Functional Dyspepsia, Anæmia, and Chlorosis.—M. Brown-Séquard, in his "Archives of Scientific and Practical Medicine," of which the first part has just appeared, in a paper on this subject states that in 1851 he had to treat a bad case of dyspepsia, and succeeded in curing the patient by a plan of treatment which deserved mention, though it was long ago adopted by Dr. Watson in this country in cases of obstinate vomiting. M. Brown-Séquard employed this plan with complete or partial success in a number of cases of dyspepsia, of chlorosis, of anæmia, and also in cases of nervous affections caused by gastric disturbances or poverty of blood. In a number of instances where failure occurred it was found that the patient had not carefully followed the rules, and that the failure was, at least in a great measure, due to this lack of care. In two cases some increase of flatulency and acid eructations took place during three or four days, when the plan was given up. In a case of dropsy, attended with anæmia, dyspeptic pains were increased for a week, when the plan was abandoned. The treatment consists in giving but very little of solid or fluid food, or any of drink, at a time, and to give these things at regular intervals of from ten to twenty or thirty minutes. All sorts of food may be taken in that way, but during the short period when the trial is made, it is obvious that the fancies of patients are laid aside, and that nourishing food, such as roasted or broiled

meat, and especially beef and mutton, eggs, well-baked bread, milk, with butter and cheese, and a very moderate quantity of vegetables and fruit, ought to constitute the dietary of the patients under treatment. This plan should be pursued two or three weeks, after which the patient should gradually return to the ordinary system of eating three times a day. M. Brown-Séquard's experience with the patients on whom he has tried the plan of feeding above mentioned shows that the amount of solid food required by an adult is nearly always as follows: from 12 to 18 oz. of cooked meat, and from 18 to 24 oz. of bread. As regards the quantity of fluids he has always allowed, it has been notably less than the amount indicated by Dr. Dalton (3 pints), and by Dr. E. Smith ($4\frac{1}{2}$ to 5 pints).

Artificial Dilatation of the Anus and Rectum.—As a result of Herr G. Simon's experiments and practical observations, a series of operative measures and means of diagnosis are available, and can be practised, that would formerly have been considered impracticable. Thus, even in infants, when thoroughly under the influence of chloroform, two fingers can be introduced into the anus, and in adults, providing the outlet of the pelvis be not too small, both hand and fore-arm can be made to enter (providing the hand do not exceed 25 centimetres in circumference), without damage to the sphincter. Avoiding the promontory of the sacrum, and taking care to exert no force, the hand can in this way penetrate far enough to touch the apex of the kidneys and the whole lower part of the belly as far as the navel. Considerable and steady pressure is required to penetrate the anal opening; but, once passed, the diagnosis can be most satisfactorily established of various diseases of the uterus, ovaries, renal tumours, tumours of the posterior wall of the abdomen, of the mesentery, and even of the liver, providing they reach down as far as to the navel, especially if the other hand be made to assist by external pressure. The examination of the cavity of the intestines can also be well made by the introduction of grooved specula having a diameter of from 5 to $5\frac{1}{2}$ centimetres. A still better mode of investigating the interior of the intestine in cases of rigid anal aperture is afforded by making an incision of from 2 to $2\frac{1}{2}$ centimetres through the posterior part of the sphincter towards the extremity of the coccyx; dilatation can then be effected to almost any extent, and this operation is of great service in cases of fistula opening high up in the hollow of the sacrum. Pain is only experienced during the first few days, and is soon diminished if the motions are kept loose. After ten or twelve days satisfactory healing occurs, with continencia alvi. Should union fail to occur, it is easy to effect it by

refreshing the edges of the wound and subsequent suture. Carcinoma, situated high up, can, after dilatation of the anus, be best removed with the sharp spoon. There is no danger of opening into the adjoining cavities, unless the whole wall of the intestine is infiltrated with the cancerous mass; no bleeding occurs afterwards, and febrile symptoms are rare. This mode of treatment with the sharp spoon is especially adapted for cases of carcinomatous stenosis; the intestine again becomes permeable, the general health improves, and the hæmorrhages are arrested. At any rate, it is to be preferred to colotomy. Simon states that he has never been able (like Nussbaum) to reach the ensiform cartilage through the rectum without the application of great force, and without doing considerable damage to the intestines. He believes that it would only be possible when the patient had a very short abdomen, and when the hand of the operator was very small. (*Archiv für Klin. Chirurgie*, 1872, xv. p. 99.)

Ovariectomy.—A long paper on this subject appears in the *New York Medical Journal* for December, from the pen of Dr. Marion Sims. Dr. Sims states that he was originally amongst those who condemned the operation, but that now he is not only in favour of it himself, but can find no one opposed to it. Yet he does not believe the method of operating as at present practised is perfect, nor that we are materially in advance of the earlier operators. Dr. Thomas gives a table of operations performed by twenty-five surgeons, beginning with Spencer Wells' 400 cases. These twenty-five have performed 1,638 operations, and lost 504 cases, giving a mortality of about one in three and a quarter. One great principle has been pretty generally adopted, that of securing the pedicle externally. This renders the operation easier and quicker, but its advocates have no better success than those who follow a different method. The clamp may have its advantages, but it also has its disadvantages, which more than counterbalance the former. It is not of universal applicability, for in some cases the pedicle is too short and thick to allow of its use at all; in others it is obliged to be removed prematurely on account of traction and the consequent suffering. In some it has slipped a little, and allowed bleeding; in a few it has severed the pedicle too soon, and allowed it to drop into the peritoneal cavity before adhesions were formed to fix it to the abdominal walls; in other instances its traction and pressure have compelled its removal, and the short stumpy pedicle has dropped in with sloughy shreds attached to poison the peritoneal membrane. For these and various other reasons Dr. Sims thinks that the clamp has seen its best days. For twenty years he has advocated the plan of tying the pedicle with silver

wire. When the pedicle was narrow he transfixed it with a double wire and tightly twisted a wire round each half. When the pedicle was broad he introduced the requisite number of separate wires, in one case as many as six, and secured it in segments. Dr. Emmet's plan he considers still better, which consists in securing the pedicle by a figure of 8 loop of wire, and drawing the whole so firmly that when the wires were fastened (by twisting) and the pedicle cut off, the ends of the constricted arteries could often be seen projecting beyond the level of the cut stump. Torsion of the arteries of the pedicle is an important improvement. Dr. Sims considers septicæmia, and not peritonitis or hæmorrhage, to be the principal cause of death in ovariectomy. He approves of Dr. Peaslees' practice of making intra-peritoneal injections of water at 98° Fahr., with the addition of liq. sodæ chlorinatæ or carbolic acid, but proposes in addition to puncture the *cul de sac* of the vagina behind the cervix uteri, and to pass a tube of some sort into the peritoneal cavity to drain off any effusion. This should be done in every instance, whether there are adhesions or not. If in three or four days we see that there is no necessity for this precautionary step in the operation, we have nothing to do but to remove the tube, and in twenty-four hours the little puncture closes up spontaneously. It cannot possibly do the least harm, and it may be the means of saving life. (*New York Medical Journal*, vol. xvi. No. 6.)

Employment of Tannin after the artificial or spontaneous evacuation of the Pus in Empyema.—M. Duboué, in a paper written in view of a recent discussion held in the Academy of Medicine of Paris, desires to call attention to the advantages that for some years past he has derived from the use of tannin in one of the most serious forms of chronic pleurisy, namely, in purulent pleurisy with spontaneous evacuation of pus through the bronchi or the thoracic walls. M. Duboué has even had recourse to tannin in cases of simple pleurisy with recent effusion of serous fluid. He warmly approves of tapping the chest for the removal of the fluid in empyema, and only recommends the tannin as an auxiliary to the surgical treatment. The tannin, he considers, fulfils two capital indications, acting both as a tonic and as an astringent. It awakens the almost abolished digestive functions, it diminishes the purulent secretion, and when a discharge of pus takes place by the bronchi in a non-tuberculous subject, and blood mingled with more or less of the fluid secreted by the pleura is expectorated as a consequence of the pleural friction, tannin diminishes and suppresses this homoptysis with satisfactory rapidity. For these reasons M. Duboué has given tannin to eleven patients who were not tuberculous, but were

affected with empyema and evacuation of the pus by the bronchi. Of these, eight perfectly recovered in a very short space of time, one proved successful after a long time, and two died. One of these last was Dr. Triquet, the aurist, who succumbed to a pulmonary embolia whilst under treatment for hectic fever supervening on empyema. The average duration of the attack in the eight cases of recovery was ten months, but one recovered in eight days, whilst another was six months. The mode of administration varies according to the case. The greater number of the eleven patients were ordered the tannin in pills in the following form:—Tannin, 45 grs. ; conserve of roses, q.s. M. ft. pil. xx. From two to four of these were taken daily before midday, and the rest before 6 P.M. The maximum dose given in the course of the day was twenty grains; the minimum was about twelve grains. Very much more than the maximum dose he gave might be administered if occasion required it. (*Journal de Médecine*, Jan. 1873.)


Symptoms of Lead-poisoning and Death in an Infant eight days old, in consequence of the Use of Lead Lotion by the Mother.—M. Bouchut relates the case of an infant eight days old, very healthy and strong, to whom he was called for symptoms of severe colic, which caused the child to scream incessantly night and day. No fæcal evacuations could be obtained, notwithstanding the use of suppositories, purgative injections, and aperients. The belly was much distended and very tender; opiate frictions afforded no relief. On close inquiry M. Bouchut ascertained that the mother had purchased and used some Eau de Mad. De la Cour (for fissures of the nipple), who sold it in secret near the Quartier des Halles, and which on examination proved to be a strong solution of acetate of lead with some other ingredients. She had applied the lotion freely to the breast and nipples before nursing the infant. In spite of all remedies the child died on the eleventh day. (*Gaz. des Hôpitaux*, 1873, No. 1.)

EDITORIAL ANNOUNCEMENT.

WE have great pleasure in stating that in May the *Practitioner* will begin to appear in an enlarged shape, without any increase of price. It has been determined to add 16 pages of additional matter, which are to be entirely devoted to Hygienic questions. Distinguished authorities have promised to write for us; and it is hoped that the Medical Officers of Health scattered throughout the country, and indeed every medical man, whether officially employed in sanitary work or not, will find our new Department of Public Health a welcome source of information respecting a class of duties which are every day being more imperatively laid on the medical profession.

Bibliography.¹

Lehrbuch der Chirurgie u. Operationslehre. Von Dr.  Bardeleben. 6 Ausg. 4 Bd. Berlin: Reimer.

Die Wirkungsweise der respirablen Gase. Von Dr.  Jochheim. Erlangen: Enke.

Werth u. Bedeutung des sauerstoffhaltigen Terpenthinöls für die Therapie der acuten Phosphorgiftung. Von H. Köhler. Pp. 73. Halle: Pfeffer.

Der Alkohol u. seine Verbannung aus unserem Arzneischatze. Von R. T. Trall. Schwelm: Wortmann.

Was sind u. wie wirken Sauerstoff- und Ozon-Sauerstoff-Inhalationen? Von Wilh. Waldmann. 8vo. pp. 27. Berlin: Hirschwald.

De l'Emploi simultané des Eaux bicarbonatés sodiques et des Eaux ferrugineuses arsenicales. Par H. Charvet. 8vo. 44 pp. — Lyon: Vingtringen.

Recherches sur les Substances et les Alkaloïdes tirés de l'Opium. Par Dr. Bouchut. Paris: Hennayer.

Du Haschisch. Étude clinique, physiologique, et thérapeutique. Par F. Villard. 8vo. pp. 72. Paris: Delahaye.

Selections from favourite Prescriptions of living American Physicians. By Dr. Horace Green. Pp. 214. New York.

¹ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.; Williams & Norgate, of Henrietta Street, Covent Garden, W.C.; or Baillière, of King William Street, Charing Cross.

THE PRACTITIONER.

APRIL, 1873.

Original Communications.

PARACENTESIS THORACIS.

BY DR. ALLBUTT, OF LEEDS, AND DR. BOWDITCH, OF BOSTON.

To the Editor of the PRACTITIONER.

DEAR SIR,

I think I may fairly confess to a feeling of pride in being able to transmit to you for publication the very remarkable and valuable letter from Dr. Bowditch which you now receive from me. I had scarcely hoped that any writings of mine would attract the attention of so eminent an authority on thoracentesis; that they would be the means of drawing from him so valuable an essay as the present, is a distinction as unexpected as it is flattering. I have the author's permission to make any use of his letter I may please, and I am therefore enabled to place it freely at your disposal. Allow me to add, that I do not urge any bolder practice than that of Dr. Bowditch himself, as that author seems to think probable; on the contrary, I agree with him strictly in every point. I have long urged free incision in recurrent empyema, but I regard the place of the incision selected by Dr. Bowditch to be not only new to me

and to others, but to be an innovation of the greatest value. With a free opening in that position, re-accumulation can scarcely be possible.

I am, &c.,

T. CLIFFORD ALLBUTT.

LEEDS, *March* 1873.

BOSTON, U.S.A., *Jan.* 19, 1873.

MY DEAR DR. ALLBUTT,

Judging from reports that I read in European medical journals of debates in medical societies and academies, and of special cases recorded by individuals, I infer that the majority of our British and Continental brethren have not yet overcome the horror formerly entertained everywhere about tapping the chest. That horror is a spectre handed down from the past, before auscultation enabled us to know precisely the condition of the thoracic organs. I felt it as much as anyone, when I began to operate, twenty-four years ago. But it very soon disappeared: first, when I found the perfect innocuousness of thoracentesis when performed with a *minute exploring trochar and canula and suction pump* (an "aspirator," in fact); and secondly, when I saw the great power this simplest of all simple operations had to alleviate intense suffering, and at times, as I believed, to save human life.

At present, I have not the least fear of tapping with the instruments first suggested to me by Dr. Wyman, after I had vainly sought from our ablest surgeons a simple, painless, or often almost painless, but efficient operation, and one that would leave no wound behind it after drawing fluid from the thorax. I had long desired to find such a method, so simple and effectual, because I saw pleuritic effusions could destroy human life, either suddenly, by dyspnœa or syncope, or by slower processes of phthisis, &c. From first to last I have never seen any injury done by my "aspirator" during these twenty-four years, and in the 270 operations I have now performed. And this I say fearlessly, whilst I confess to some very grave mistakes in my earlier operations. For example, I have tapped the lung; or I have driven, with my pump, by a careless turn of the handle, air into the pleura instead of drawing out fluid, &c.

This pump is like one imported long since for a stomach-pump, from "dear old England" (pardon the affectionate epithet, for its genuineness). By turning the upper half of the barrel a quarter of a circle, you can reverse the operations of suction and discharge. By it all necessity for "stopcocks" is avoided, and the pump can always be fastened to the canula immediately on the withdrawal of the trochar, so that air cannot enter the chest. In fact, so simple and so safe is this operation, that when a teacher at the Harvard Medical School, I often told my pupils never to allow fear of its consequences or ignorance of its details to prevent them *from urging the operation upon unwilling patients and their friends*. If it would not be deemed impertinent on my part, I would urge the same thought (as you already have so tersely done in the *Practitioner* for August 1872) upon my medical brethren of the British Isles. Similar thoughts, I fear, may be urged upon some of our ablest associates on the Continent, if we may judge from the following extracts, taken from *Archives Générales de Médecine*, Nov. 1872, p. 586, the *London Lancet*, Aug. 10, 1872; and *Berliner klinische Wochenschrift*, 1872, No. 6,—all printed during this last year.

Dr. Heureau, in an elaborate article in the *Archives*, "De l'Aspiration comme Méthode thérapeutique," says: "The time has not yet arrived at which we can ask whether this force (aspiration) has advantages or disadvantages with reference to the organs of respiration. Thus it is that the dogmatism of mere theory sets aside, as of no value, the experience of a quarter of a century on this side of the Atlantic!

So Roger, of the Children's Hospital in Paris, as quoted in the *Lancet*, makes as his ultimate *résumé* of thoracentesis in children, the following statement:—"Always operate when the pleura contains pus; rarely when there is abundant effusion of serum; never in slight effusions." I should fear to lose patients if I followed these directions. I deem orthopnea, even temporary and transitory, and still more if permanent, as a more valuable indication for operating than either of the above rules—which show, I think, this hesitation about operating against which I protest.

And finally, I fear (from the fact that Dr. Quincke, the assistant of Frerichs, in Berlin, had the misfortune to lose two

patients out of fifteen on which he operated) that the operation is not conducted at Berlin in so simple a manner as it is done here, where I myself have had 270 operations without any deaths consequent thereupon. In fact, Dr. Quincke, I infer, believes that the deaths in his patients arose not so much from the operation as from manipulations to which they were submitted afterwards, because of his own laudable wish to thoroughly cleanse the interior of the pleural cavity.

Thus much permit me, an "outsider," to say on European medical practice, so far as a glance can give me an opinion.

The following are some of the general conclusions to which my own experience of this operation has led me:—

First.—I always operate *first* with a very small exploring trochar and canula, which latter can be attached to a suction pump. This is the general rule, and has not been departed from for years, owing perhaps to the fact that physicians in Boston and its vicinity rarely allow pus to remain so long as to "point"—we operate long before that period arrives. I thrust the trochar in *fearlessly and quickly*, so as to avoid carrying the pleural false membrane before the canula instead of transfixing it. I choose a point in the back on a line with the angle of the scapula and between the eighth and ninth or ninth and tenth ribs, and at least an inch and a half above a horizontal line drawn through the lowest point at which the respiratory murmur is heard in the other lung. I draw fluid slowly, but as continuously as possible, as long as I can do so, or until severe pain or stricture over the chest, or any serious discomfort of any kind, comes on. Coughing does not always induce me to desist; but a severe harassing cough checks further operation. After the operation I advise entire rest for twenty-four hours at least. I have not been obliged to use opiates except once or twice, to check an *extravagant* cough; I should never check a mild one, as it is usually the healthful result of expansion of the lung.

Second.—No amount or character of complications of disease, either cephalic, thoracic, or abdominal, prevents me from operating when I find a large effusion, or any effusion that I think is adding distress to a patient already very ill. In some such cases I operate simply to give relief, and I do so as freely as I

would use a subcutaneous injection of morphine, prescribe a blister, or a cathartic. I had one case, in a very aged man who had had manifest cardiac disease, but who, at the time I was called to him, had been unable to lie down for two or three weeks, with general dropsy; the legs, abdomen, and the left pleura being all distended. Tapping the chest and drawing away over two quarts of serum relieved all the severe symptoms, and he lived for years afterwards. I therefore now *hope* for *more* than simple relief, even in the worst cases, and in those in which the prognosis would undoubtedly be for a fatal result unless relief can be obtained by the operation.

Third.—Age and sex, and even the existence of pregnancy, I deem of no importance when considering the question of thoracentesis in a severe case. The youngest babe and the octogenarian, the strongest and fattest of men, with chest parietes so thick that my usual trochar ($1\frac{3}{4}$ inches long) failed to reach the interior of the chest, and the thinnest, most emaciated of women, have all alike been operated on. In a pregnant woman I tapped four times before and five times after delivery, and finally made a permanent opening: she lived many years afterwards in comparative comfort. In the case of my fat patient, I had simply to get a new and longer trochar, and success followed.

My only criteria for judging as to the propriety of operating in any cases are the questions,—

Is the dyspnœa severe enough?

Has it occurred, even once, so severely that in the eyes of attendants it has seemed to threaten life even momentarily?

Or, finally, has sufficient time elapsed for remedies to have effect without such effect being produced?

But, *fourth*, on this question of time, I fear I may not be able to satisfy either myself or you. I will, however, make one broad statement, viz.: whenever I hear that a temporary orthopnœa has occurred, or that a severe dyspnœa is actually present, I never think of waiting, but *operate instantly*, however serious and complicated all the other signs may be. But if a patient has been ill only a few days or a week; if the effusion be small, the dyspnœa but slight; if remedies seem to be having a beneficial effect, I have hitherto, and I presume I may here-

after, let the fluid remain three or four weeks, perhaps, before *urging* an operation. My past experience has been in this direction, although perhaps I have erred in not doing as you suggest in the article already cited, viz. in not operating immediately after finding fluid effused even to a moderate amount. My reason does not give me valid grounds for delay, and certainly my experience of the effects of the operation suggests nothing but that pleasant results would follow it whenever performed. I think, therefore, we *may* operate in any case where the quantity of fluid is obviously so large as to seriously obstruct the greater part of a lung, as, for example, when the level of the fluid seems to rise to the middle of the back, and in so doing oppresses the respiratory murmur in the entire organ. But in such a case, if it did not cause serious symptoms, I might defer to the patient's wishes for a time; and delay the operation a few weeks.

Fifth.—The character of the fluid, though it has at times influenced my prognosis, has never completely foiled me in the use of the exploring canula. Provided the operator steadily draws and does not interrupt the course of the fluid, coagulation can hardly take place in the minute instrument. Pus as thick as honey, and which required a little time to come to a level in the receiving basin, I have drawn through it. It is true, however, that on a few occasions (usually when first introducing the canula) I have been unable to draw out what I subsequently found to be serum. I have tried sometimes the throwing in (by reversing the operations of the pump) of a half-ounce, or less, of lukewarm water. This sometimes has removed the lymph (I presume) that obstructed the end of the canula, and the subsequent attempts to draw fluid have been successful. If, however, the obstruction has still continued, the withdrawal of the instrument becomes necessary, and the re-introduction in the intercostal space just above the previous point of puncture has always succeeded.

Sixth.—Any "*valvular opening*" of the parietes, when using the trochar or in the common surgical operation, seems to me, in the light of my experience, worse than useless—absolutely bad. It is wholly uncalled for with the "*aspirator*" canula; and when an incision is made, it is impossible, in subsequent

daily dressings of the wound and washings out of the pleura, to prevent the admission of air. It does harm by its liability to form a sinuous fistulous opening in the chest whereby the ribs may become eroded. Moreover, the *free* exit of pus is prevented by it, and phthisis is more likely to set in.

Seventh.—When and how ought a permanent opening to be made? A decision on this point is often very difficult. Let me name a few favouring circumstances.

(a) Youth is much more favourable than advanced life.

(b) The length of time the disease has lasted, if short, is favourable, because it leads us to hope for an easy and early expansion of the compressed lung. If *many* months have elapsed since the disease began, we can have rather less hope. But mere length of time, however long, should not prevent us from making it, provided the operation seems called for by urgent symptoms.

(c) Uncomplicated pleuritic effusion is, of course, more favourable than when the patient suffers also from other diseases.

Hence I incline to make a permanent opening in a young or middle-aged, generally healthy subject, one who has been ill but a short time. Moreover, he must have been operated on at least once with the “aspirator,” and pus must have been drawn. Moreover, this pus must show a tendency to re-accumulate rapidly. In such a case, and with serious symptoms supervening on the return of the effusion, a permanent opening may be made, I think, with a good hope of success, provided the subsequent treatment be also wise.

On the contrary, a person above middle life, who has been long ill and afflicted with cough and other symptoms of phthisis, is one in whose case, until very lately, I should have preferred repeated tapplings with the “aspirator,” for I have feared the risk of hectic fever setting in under the influence of the constant drain of a long flow of pus. I frankly confess to a grave suspicion whether I have not erred in some of these cases; for certainly, though few have eventually *wholly* recovered, yet their lives have been lengthened and made more tolerable by the operation.

But there is a class of intermediate cases between these two

extremes, which at times bitterly tests a man's powers of exact differential diagnosis or prognosis. All that can be said is, that each case must be minutely and accurately examined, and the question of making a permanent opening decided only after a searching analysis of all the circumstances connected with it. While serous fluid is drawn by the "aspirator," *I think* we should not be justified in making a permanent opening with the absolute certainty that pus will soon be formed. Upon this question, however, we need facts.

Blood, unless it be in the chest from an external injury, and needing a surgical operation for its removal, should always contra-indicate a permanent opening; for, in my experience, a bloody fluid at the *first tapping* has always indicated serious, and generally malignant, disease of the lung or pleura, and therefore a permanent opening seems contra-indicated.

Eighth.—How shall a permanent opening be made? Formerly I used silver tubes. At times I have used those of gum elastic. One patient contrived for himself a spiral silver-plated wire tube. This he found easier than either of the others. The silver tubes are painful. Those of gum elastic have, at times, broken off into the pleural cavity. I know of one case, under the care of a professional associate, in which this accident caused great suffering. Moreover, all such tubes, of whatever substance made, are liable to become clogged. Very evil results also may follow, unless great care be taken. For example, although there may seem to be a daily free discharge of pus, a quantity of it may accumulate *below* the point at which the tube enters the chest, and there become semi-solid and foetid. The possible consequences of this state of things, as actually occurred in one of my own patients, are hectic fever and many of the symptoms of phthisis. In the case alluded to they continued to increase until I began thoroughly to wash out the cavity with warm water, and the removal was made by this means of a large quantity of very foetid pus. Relief to all unfavourable signs immediately supervened, with ultimate recovery of the patient. When, therefore, hereafter I shall have made up my mind that a permanent opening is needed to prevent the constant re-accumulation of pus, my reason, and the small but very satisfactory result in two cases in which that

operation has been done by free incision through an intercostal space, will induce me to advise that proceeding rather than the use of any tube or trochar however large. That incision I should generally advise should be made low in the back instead of in front as advised formerly in books of surgery. The dissection should be made carefully down to the pleura, and the cavity laid open to the extent of at least two inches, perhaps more, provided the free exit of pus can be made more thorough. I shall make no effort to keep out the air by valvular openings, because I know I cannot prevent it from entering, and because I believe it will do no harm—certainly much less harm than any contrivance which, while trying to exclude air, prevents the free passage of all fluids out. I shall have that aperture kept freely open by lint until the cavity has fully healed from the interior, if that be possible. I shall use, from the second or third day, simple warm water or carbolised water injections into the pleura; and I shall let all fluids drain into a large poultice, or mass of cotton wadding, placed on the chest.

In conclusion, and as an example of this method, let me give you a brief summary of my last case of this kind.

The patient was a middle-aged man, a ticket seller at one of our country railroad stations. I saw him on Oct. 14, 1871. Having been previously stout and strong, he had been seized with signs of pleurisy eight months before he called at my residence. He had many of the symptoms of phthisis, and I expected to find grave pulmonary disease. I was surprised, however, to find signs chiefly of pleurisy with effusion. He had a violent and constant cough; copious expectoration, not bloody; dyspnoea, and pain in the left side. The pulse was 120. Flatness was found below the angle of the right scapula, and the right breast was a little less resonant than the left. Change of posture produced only a slight change of sound. Once I heard a sonorous râle in the left breast. Generally, there were few râles anywhere, but the respiratory murmur was less in the right than in the left lung. No enlargement of the right side of the chest. Neither the heart nor the liver was dislocated. I could not but have grave fears of the result; but I told him I could *relieve* him by tapping, but I could

promise nothing more. But I added, that if I or any friend were in the same condition, I should urge the operation.

On Oct. 26 (twelve days after his first visit), being much harassed by cough and increasing dyspnœa, he requested the operation. I drew off immediately, with the exploring trochar, ʒviij of thick pus. *Entire* relief to the severe cough and to the dyspnœa was the immediate result, much to the surprise of myself, and still more of my patient. But the symptoms soon began to return, and on Nov. 9 were severe, and he was raising bloody sputa. The murmur was very obscure in the right breast, with an occasional râle. There was no real dulness on percussion, except in the back as before. Subsequently there was evident contraction of the right side, as marked by depressed intercostal spaces and by the falling of the scapula towards the vertebral column. There was, however, a slight change of dulness on change of posture. The cough continued. The prospect was, in my estimation, that he would gradually fall into phthisis, unless, by a permanent opening, the offending fluid could be not only drawn off but wholly prevented from re-accumulating, by a large incision over the seat of the local abscess, as the pleuritic effusion had really then become. Formerly I should have tapped him repeatedly with the small trochar; but experience led me to fear that repeated punctures, though at times successful, were oftener only a happy means for delaying a fatal end. After stating my doubts frankly to the patient, I advised him strongly to allow a free incision to be made. He consenting, Dr. John Homans, of this city, according to my direction, laid open the back, Dec. 8 (fifty-two days from the time I first saw him, and nine months from the first attack). This was done with an incision about three inches long in the skin, and a slit capable of admitting the tips of four fingers between the eighth and ninth ribs. A probe was passed in, horizontally, five inches. The upper part of the cavity could not be reached by the instruments then at our disposal. About a pint of pus escaped at the time of the operation, and it flowed copiously for several days. Unfortunately, owing to the carelessness of attendants, he was severely chilled by exposure to a sudden and very great change of temperature of the external air. He was left in a room without any fire for several hours.

The consequence (probably of this) was acute pneumonia of the lower lobe of the other side. Notwithstanding this grave complication, and which we thought at one moment would surely destroy his life, relief of the original trouble, and of its symptoms, was as complete as at my first operation. In a few weeks he was sufficiently recovered to be able to return to the country with the strict injunction to his attending physician to keep the aperture into the thorax *widely* open.

On April 18, 1872 (four-and-a-quarter months after the incision), he called at my residence. There was a little daily discharge, chiefly of a bloody serous character, after probing to keep the aperture open. His general symptoms had almost wholly gone. As the contraction of the side was more manifest, I ordered him to make strong efforts to expand it, by compressing the left side and by voluntarily expanding the right.

June 20, 1872 (six months from incision).—No discharge. Only a small aperture remaining in the long cicatrix. It was kept open by a short and small spiral wire that passed just through the intercostal space. The cavity was gone; and what was still more gratifying was, that on auscultation and percussion scarcely any difference could be noticed between the two lungs. The sides of the chest were of the same size and form. Evidently the operation, aided by his efforts, had been eminently successful. I told him to omit the wire and to let the opening close up. He has been well since, so far as I can learn. . . .

[The remainder of Dr. Bowditch's letter is occupied with other matters, not referring to thoracentesis.]

ON THE OLEATE OF MERCURY IN SYPHILIS.

BY BERKELEY HILL, F.R.C.S.,

*Surgeon to University College Hospital, and Surgeon for Out-patients to the
Lock Hospital.*

SINCE this preparation was introduced to the notice of the profession by Mr. Marshall, about a year ago, I have employed it in a large number of cases in hospital and private practice, with the following results. In the first place, if continuously applied, it quickly produces the usual effects of mercury on the system, and if used in sufficient quantity causes salivation. Secondly, it is apt, in delicate fair-skinned persons, to excite violent smarting pain, which, though rarely lasting more than half an hour, if so much, is enough to disgust them with the remedy. The irritation may even cause erythema and slight vesication, though I have never seen any more serious local effect than this. To avoid these undesirable occurrences, Mr. Marshall has devised three preparations of different strengths, containing 20, 10, and 5 per cent. of peroxide of mercury respectively: to the weakest dilution, 10 per cent. of morphia as oleate of that base is added, to allay the irritation from the mercury, and assuage the local pain of inflammation, when used for affections of that kind.

The preparations are best made according to a formula prescribed by Mr. Martindale, the dispenser to University College Hospital:—For the 20 per cent. solution, stir 10 drachms of oleic acid in a mortar, while 2 drachms of precipitated peroxide of mercury are gradually sprinkled into it, and triturate frequently during twenty-four hours, until the peroxide is dissolved and a gelatinous solution is formed. The 10 per cent. solution is made in exactly the same way, but the smaller

quantity of oxide renders the compound more fluid. The morphia and mercury oleate is made by dissolving 1 drachm of pure alkaloid of morphia in 5 drachms of oleic acid and mixing the solution with 5 drachms of 10 per cent. oleate of mercury. It is necessary to use the oxide freshly precipitated from an aqueous solution, not one produced by dry heat; and heat should not be employed to dissolve the mercury in the acid, as even very moderate elevation of temperature causes some decomposition of the oxide to take place.

With one or other of these preparations the application of this form of mercury can be continued on even very sensitive skins. When used for inunction, instead of the grey ointment, about a scruple or half a drachm of the 20 per cent. jelly should be rubbed gently into the flank till it is absorbed by the skin, which occurs in about eight or ten minutes, leaving the skin almost dry and not greasy. This may be repeated once or twice in twenty-four hours, of course changing the site of the inunction each time. The anointed part may be washed next day without fear. This quantity usually causes swelling and slight soreness of the gums in a week, if anointed once a day, and in four days if applied twice daily. Before using the stronger solution it is well to test the skin with the weaker form, lest too energetic application of the oleate should cause painful irritation and trouble. But I have found the 10 per cent. solution most useful as an adjuvant to the ordinary treatment by iodide of potash internally, or for persons whose stomachs do not bear mercury well. For example, in cases of leproid, or tubercular eruptions, relapsing after disappearing more than once, this form of mixed treatment is usually very successful.

The great advantage of the oleate over any other form of mercury, when externally applied, lies in the rapidity of its absorption, which makes it very serviceable as a kind of cosmetic; that is, to paint over syphilitic papules or stains in the face or other exposed parts. For this purpose I direct the patient to rub into the spots themselves, night and morning, a little of the 20 per cent. solution with the tip of the finger—the usual treatment being continued at the same time. It is remarkable to observe how rapidly the papules sink down and grow pale when the oleate is directly applied to them. If the 20 per cent.

is too stimulating, the weaker ones may be employed, though their effect is less satisfactory.

Again, the oleates are very useful in fissures of the fingers about the nails or in the palms. Rubbing the 10 per cent., or, if there is much soreness, the 5 per cent. solution with morphia, into the fingers, at night, and sleeping in wash-leather gloves, is a very effectual way of healing these troublesome affections. By day the cracks should be well closed by court-plaster and plastic collodion, and gloves worn out of doors.

I have not had much success with the oleate in non-syphilitic affections, but I have not tried it extensively. It has proved a very effective parasiticide for pediculi, as its penetrating power enables it to diffuse itself thoroughly over the scalp and pubis. I have also used it to inflamed joints, as a controllant of inflammatory action, but I have not perceived any clear benefit to be derived from its use in such cases. In syphilitic affections the oleate is most serviceable, being a certain and less disagreeable cutaneous application than ointments, and really hastening the subsidence of papules and other disfigurements of exposed parts of the skin.

THE GEOMETRICAL METHOD IN MEDICINE.

BY JAMES ROSS, M.D., WATERFOOT, NEAR MANCHESTER.

PART II.

THE philosophy of the fifteenth and sixteenth centuries, the period of the revival, released the human spirit from the thralldom of scholasticism, and substituted for it the milder authority of ancient philosophy and admiration for ancient genius. It not only shook the authority of the Church in religion and morals; but overthrew the equally despotic authority of Galen in medicine. About the beginning of the seventeenth century a new movement took its rise which completed the revolution in thought which had thus feebly begun, and conducted the human mind to absolute independence. This was the coming into existence of natural science, and the observation of nature by the method of experience. The discovery of new processes in mathematics and geometry by Napier, Kepler, Cavalieri, and Descartes; of the law of virtual velocities in statics, and of accelerated and retarded motion in dynamics, by Galileo; of the planetary motions by Kepler; and the speculations of Descartes in celestial mechanics, combined to give an immense impulse to the development of physical science. These brilliant results produced an entire revolution in man's conceptions of the universe, and, as might be expected, powerfully influenced the science of medicine. And the discovery about this time of the circulation by Harvey rendered the union between medicine and physical science more definite and intimate. This discovery clearly meant that the circulation of the blood was in great part explicable upon physical principles; and when this inference was generalised so as to include the other

functions of the body, the belief arose that the body was a mere machine, and that its functions could be explained by mathematical and hydraulic laws. Thus originated the itromathematical school of Medicine. But the philosophy of Descartes was not only one of the main factors which determined the union of medicine with mathematics; but his method of research, the geometrical method, determined the form in which almost the entire field of human knowledge was cast for close upon a century. The main exception to this rule will be found in the psychology of Locke, who carried the Baconian principles with regard to observation and experiment into the region of mind; but the philosophy of Locke did not produce a great influence upon medicine until long subsequent to the time at present under consideration. It is therefore necessary, before proceeding further, to notice very briefly the Cartesian philosophy, both on account of its direct influence upon medical doctrines, and of its indirect influence in determining *the form* in which these doctrines were cast and the method adopted in evolving them.

Descartes was impressed with the fact of how apt we are to be led astray by prejudices of education; and this led him to doubt everything until the evidence was so clear and cogent as to compel his assent. He found that he could doubt everything but the existence of the present consciousness. To doubt the existence of thought annihilates itself, for the very doubt is evidence of the reality of thought. Descartes therefore found that thought was the only certain existence; and further analysis showed him that all our knowledge could be resolved into thought; and hence, so far as he was concerned, all existence was thought. To the certainty of the existence of thought, analysis brought him down, and upon this synthesis must build up. The only objection which can be urged against this analysis, is that it is very incomplete; but when Descartes begins to build upon it, assumptions creep into the principle which were not the product of analysis. His famous formula, *Cogito, ergo sum*, assumed a great deal more than the certainty of the existence of thought. It assumed in the first place the existence of a thinking being—of the Ego. This assumption, however, was not sufficient to build a system upon, and he was driven to make other assumptions.

Thought he found to be finite and imperfect, but these conceptions elevated him to those of the infinite and perfect; ideas which he could neither destroy nor modify, and must, therefore, relate to a being foreign to himself; namely, God. Thus Descartes proved the reality of the Ego, and the existence of God from the authority of thought alone; and, finally, he rested his certainty of the objective reality of the external world upon the Divine veracity. His three existences—the thinking mind, God, and extended matter—are deduced directly or indirectly from the existence of thought; or, rather, are empirically assumed in order to widen the data which resulted from an incomplete and imperfect analysis of the facts of consciousness. The essence of mind is thought; of matter, extension: these substances have nothing in common, but stand opposed to each other, like centripetal and centrifugal forces. From this it follows that there is a similar antagonistic relation between soul and body; and when the two meet, as in man, they are only able to do so by Divine assistance.

Let us now dwell for a moment upon the physiology of Descartes, which is developed with great particularity in the *Tractatus de Homine*. The sharp distinction which he drew between mind and matter, soul and body, in his metaphysics, is of course maintained in his physiology. He says: "Et necesse est ut primum seorsim describam corpus, deinde animam quoque seorsim; ac denique ut ostendam quo pacto hæ duæ naturæ junctæ et unitæ esse debeant, ad componendos homines, qui nobis similes sint."¹ In order to escape the heresy-hunters of the day, he pretends that he is only describing a hypothetical man. The body is undoubtedly material, and consequently subject to physical laws. It is a completed machine which acts and performs all the animal functions like a clock or automaton. Descartes says: "Considerari, inquam, velim, has omnes functiones in hac machina naturaliter ex organorum ejus dispositione sequi; non aliter quam horologii aut alterius automati motus ex ponderum et rotarum dispositione. Adeo ut propter eas necesse non sit, ullam aliam in ipsa concipere vegetativam, vel sensitivam animam, aut quodcunque aliud motus ac vitæ principium, præter sanguinem ac spiritus agitados

¹ Renati Descartes Tractatus Homine et de Formatione Fœtus, p. 1.

calore ignis istius, qui continuo in corde ardet, et non alterius naturæ est, quam omnes alii ignes in corporibus inanimatis."¹ The lower animals, according to Descartes, do not possess thought and self-consciousness, and are therefore mere automata; but in man there is the indwelling thought which is the essence of spirit. But thought has no extension, and consequently it can only come in contact with the body at a single point; and as the pineal gland is the only single part of the brain, it is selected as its seat. It has already been mentioned that Descartes found the conciliation of mind and matter in God; but in his physiology he employs the animal spirits, which were supposed to be a subtile elastic fluid, secreted from the blood by the brain, as a *deus ex machina*, in order to render intelligible the action of the soul upon the body.²

The philosophy of Descartes was a dualism without any essential unity, and consequently it gave origin to two schools of philosophic thought; a one-sided *idealism* on the one hand, and an equally one-sided *realism* on the other. The realistic aspect of the Cartesian philosophy was conducted more in accordance with the Baconian method of observation and experiment than the idealistic. Descartes, however, only employs observation and experiment in order to verify conclusions drawn from a few axioms and general principles; while Bacon recommended the method which "constructs its axioms from the senses and particulars, by ascending continually and gradually, till it finally arrives at the most general axioms."³ The realism or sensualism of Descartes flowed on through the empiricism of Locke, who carried the Baconian principles into the domain of mind, founded the English school of psychology, and may be regarded as the father of modern materialism and empiricism. Locke held the opinion that all our knowledge springs from experience, and admitted two sources of knowledge—sensation and experience. Locke brushes aside as useless and unfruitful, all questions with regard to essences and substances. Berkeley

¹ Renati Descartes Tractatus Homine et de Formatione Fœtus, p. 190.

² Anyone interested in this subject should read Professor Huxley's beautiful essay "On Descartes' Discourse;" Lay Sermons, Addresses, &c., p. 351 et seq.

³ Bacon's "Novum Organum" and "Advancement of Learning," Bohn's Scientific Library, p. 386.

carried out the principles of Locke, and denied the existence of matter; while Hume on the same principles rejected mind also. The influence of this branch of philosophy upon medical doctrines may be traced principally through Cullen and Brown. The empiricism of Locke was carried in France to its extreme consequences in the sensualism of Condillac and the materialism of La Mettrie, the latter of whom gave the significant title of "L'Homme Machine" to one of his works. The influence of this branch of philosophy may be traced into modern physiology through Priestley.

Let us now turn for a moment to the idealistic aspect of the Cartesian philosophy. The Greek philosophers meant originally by $\psi\upsilon\chi\eta$ simply breath, which was supposed to leave the body through the mouth when the person was dead, and to go to the place of the invisible (Αἰδης). This term ($\psi\upsilon\chi\eta$) afterwards came to mean the principle of life as distinguished from the decaying body; and finally, the immaterial and immortal part of man. But it is only when Descartes drew such a rigorous distinction between mind and matter, that philosophy set to work to reconcile the antithesis, and to show how two such heterogeneous powers as soul and body could act upon each other. To resolve this difficulty Descartes had recourse, as we have already seen, to the Divine assistance, a conception which was further developed by De la Forge and Geulinx into the theory of occasional causes. Malebranche believed that the soul sees and knows all things in God; and Spinoza carried the doctrine to its logical consequences when he inferred that the finite is a mere accident, and that there is only one true being—God.

From this position Leibnitz endeavoured to rescue philosophy by his theory of monads, to which he affiliated the well-known hypothesis of pre-established harmony. We shall have to refer to Leibnitz's monadology when we come to speak of Hoffmann's system of medicine. The influence which the idealistic aspect of the Cartesian philosophy exerted upon physiological and medical doctrines may be traced through the *Anima* of Stahl, the Rational Soul of Hoffmann, the vital principle of Barthez and Whytt, the *nîsus formations* of Blumenbach, to the "vitality" of some of our modern physiologists. It is, however, impossible at

present to trace either the genetic relations of these ideas, or the different shades of meaning which their authors attach to them. This sketch of the Cartesian philosophy, imperfect though it be, is already disproportionately long for a short article like the present. My excuse is, that it is impossible to have a clear conception of the *form* which medical theory assumes in any age, except it is exhibited in its relation to, and as a product of, the philosophy of the epoch. We must now direct our attention to the systems of medicine constructed by the geometrical method of investigation on the basis of *Solidism*.

Towards the middle of the seventeenth century the disciples of Galileo organised at Florence the Academy del Cimento, with the view of cultivating the physics of their master, and of applying it to the entire phenomena of nature. The first regular attempt to apply mathematical and hydraulic laws to the explanation of the phenomena of life was made by members of this society. Borelli explained muscular movements by statical laws, and applied the theory of the lever to the explanation of the movements of the limbs. His method of research, however, appears to have been an instance of the method of Residues. He applied mechanical laws to some of the functions of the body, leaving the remainder either unexplained, or adopting the chemical theories of his time. He regarded, for instance, the effervescence of the nervous fluid with the blood as the proximate cause of muscular movement. And indeed all the early iatro-mathematicians admitted chemical theory into their physiology and pathology; and hence their medical theory was a mixture of *fluidism* and of *solidism*. But in tracing the development of this school we find that the mechanical explanations became more and more predominant, and chemical explanations were less frequently resorted to. At first mathematical and hydraulic laws were only applied to the explanation of animal movements and the circulation of the blood; but soon great attention was paid to the diameter of the arteries, and especially to the relation which exists between the diameter of the principal trunk and that of its branches, to the angles formed in the dichotomous division of the arteries, the curves and convolutions of the secretory canals; and these, along with various other mechanical conceptions, were combined with wonderful

ingenuity, so as to bring more and more of the functions of the body, and the deviations of disease, within the range of the physical theory. And along with the ever-increasing ascendancy of mechanical views of life proceeded an ever-increasing importance attributed to the solids of the body. When about this time the microscope was so far perfected that Leeuwenhoek had discovered the capillary circulation and the blood-corpuscles, a new impulse was given in that direction, which led to the predominance of *Solidism*. But when something like a harmonious theory of life and of disease was attained, it was not carried out consistently in practice. Baglivi, who was one of the ablest and most consistent of the iatro-mathematicians, drew a distinction between theory and practice. In the former he adopted the mechanical hypothesis to the fullest extent, but he found it so insecure a foundation for the latter that he recommended the adoption of the Hippocratic method. This distinction between theory and practice was adopted by all the early iatro-mathematicians, so that they were thus rescued from many an extravagance in practice into which their partial theory would otherwise have led them. But a theory of life which was so manifestly defective that even its strongest partisans had to reject its aid almost entirely as a guide in practice, could have no elements of stability. The truth of this remark will appear in a stronger light when it is considered that the very practitioners who admitted its insecurity as a basis for the art of medicine were the men who mainly developed the theory. The chemiatic hypothesis of Sylvius and Willis had equally failed to assist the practitioner; and, as might be expected, there was a revulsion against all theory in medicine, which led to the revival under Sydenham of the Hippocratic method of clinical observation.

The human mind, however, can never be contented with isolated observations, nor with empirical rules however valuable; but it always seeks for a unification of its knowledge. A more elaborate attempt was soon made to construct a complete system on the basis of *solidism*. I allude to Hoffmann's system, which must be examined a little more in detail, because it is one of the best examples of the application of the geometrical method in medicine. Hoffmann adopted this method, not accidentally and

blindly, but deliberately, and as the result of mature consideration.

His language is so explicit upon this point that I shall quote it at length: "Sicuti vero geometræ ex principiis et propositionibus simplicibus, facilibus ac claris et manifestis, aptas conclusiones et connexiones, debito ordine ac serie efformant, et sic difficilia explicant, deducunt ac incognita detegunt: ita etiam medicus et philosophus in omnibus quæ circa corpus humanum eveniunt mutationibus, ex claris principiis veras conclusiones et connexiones conficere et elicere debet."¹ Man consists, according to Hoffmann, of an intelligent and freely-acting substance—mind; united with an organic, most skilfully constructed, living body.² Stahl attributed all the functions of the body to his *Anima*. The mind was all important, and, indeed, bestowed life upon the body. This is still the official view of the Romish Church of the relations between soul and body. "Man" is declared to be "one complete being, made up of body and soul, in the sense that the intellectual soul is by itself the true and immediate *form* (in the scholastic sense) of the body."³ It will be noticed that Hoffmann's conception of man differs essentially from that of Stahl. The soul is, according to the former, united to an organic and *living* body; hence both organisation and life are independent of it. How, then, did the soul act upon the body? Stahl did not trouble himself with this question. He regarded the action of the former upon the latter as direct and immediate, and was justified in adopting this view if the *Anima* conferred life upon the body. Hoffmann, however, could not get over the difficulty in this manner. We have already seen that Descartes had recourse in his physiology to the animal spirits of the ancients as a medium between soul and body; but the machinery proposed by Hoffmann was of a much more refined character. He still retained the soul, called by him the rational soul, on the one side, and the animal spirits, named nervous fluid, on the other, as the two terms of the antithesis; but interposed between them a third substance—the sensitive soul—which he supposed to be of a nature intermediate between

¹ "Opera Omnia," vol. i. p. 23.

² Ibid. p. 26.

³ "On the Theory of the Human Soul." By the Rev. J. B. Dalgairns. (*Contemporary Review*, December 1870.)

mind and matter. By this assumption Hoffmann not only supposed that he could bridge over the gulf which separated mind from matter, but he was also enabled to allow the existence of mind in the lower animals, and not to regard them, like Descartes, as simple automata. The nature of the sentient principle Hoffmann could not precisely determine; its investigation belonged to a higher species of metaphysics than medical inquiry could reach.¹ So far, however, as can be gathered from his writings, Hoffmann's conception of the sensitive soul was borrowed from Leibnitz's theory of *monads*. The monads were, according to Leibnitz, unextended points possessed of living activity, and so far they are not very dissimilar to Boscovich's theory of centres of force. The monads were, however, endowed with intelligence; each was, in fact, a living soul. This conception was a purely metaphysical one; but from the unextended points which constituted the monads, the transition to the Greek atoms was easy. The Greek atoms again led him to the æther of physical philosophers, which he considered to be identical with the animal spirits; and these subtile, elastic fluids were imagined to be the instruments of the sensitive soul.² Sometimes, however, he appears to regard the sensitive soul and æther as identical, since he attributes to the globules of the latter a fixed idea of the organism, which they form and maintain according to this conception.³ The nervous fluid was supposed to be secreted from the blood by the brain,⁴ and to be distributed by the nerves to the various parts of the body. The distribution was aided by a hypothetical systolic and diastolic motion of the *dura mater*.⁵ Hoffmann regarded this fluid as the prime motive power of the body, and the cause of sensation, passion, and muscular movements.⁶ Having passed from the rational soul by means of the sensitive soul to a purely material fluid, he comes to the following conclusion, which I will give in his own words:—"Medicina tamen, tam in theoreticis, quam practicis demonstrationibus ac deductionibus, pure mechanica est, id est, principiis mere me-

¹ "Opera Omnia," vol. i. p. 96.

² Ibid. vol. i. p. 88.

³ See "Compendium der Geschichte der Medicin." Von Dr. B. Hirschel, Seite 266.

⁴ "Opera Omnia," vol. i. p. 83.

⁵ Ibid. p. 85.

⁶ Ibid. p. 86.

chanicis, quæ sunt motus et materia, innititur.”¹ Hoffmann now considers himself free to develop his theory of medicine from purely mechanical laws; and this leads us to notice his second fundamental principle.

As we have already seen, Hoffmann defined man as a being composed of mind conjoined to a living body; and, as might be expected, he maintained that life does not in any way depend upon the mind. The problem of the physician is to ascertain how the various motions of the body distribute the matter of which it is composed; and how the ordinary properties of the matter modify the motions. The fundamental properties of body are cohesion and resistance, and its forces act according to number, measure, and weight, and these must be investigated by mechanical and mathematical laws.² Life depends upon motion alone; death results from cessation of motion; but never upon defect of excretion.³ Like his predecessors of the iatro-mathematical school, Hoffmann regarded the continual movement of the heart and arteries as the cause of life, and that which maintained the integrity of the mixture of the elements. The circulation of the blood was also regarded as the cause of animal heat, nutrition, growth, and of all the vital functions.⁴ Although he thought that the proximate cause of the motion of the heart resided in the humours, especially the blood which contains the nervous spirit, yet according to him external forces acted less upon the humours than upon the solids, especially the solid parts which contained the nervous fluid. This explains the predominance which the nervous system acquired in his system. He also explained the consensus which exists between different parts of the organism by means of the nervous system.⁵

This short sketch of his physiology gives a clue to his pathology. He regards disease as a disturbance of the due proportion and order of the motions in solids and fluids—which may be excessively accelerated or retarded either over the whole or in certain parts of the body—conjoined with manifest lesions of secretion, excretion, and other functions of the living body.⁶

¹ “Opera Omnia,” vol. i. p. 97.

² Ibid. pp. 97, 98.

³ F. Hoffmanni Dissertationum. Diss. Physico-Med. Select. Dis. p. 379.

⁴ “Opera Omnia,” p. 51.

⁵ Ibid. p. 309.

⁶ Ibid. p. 162.

Excess of movement causes spasm, which may be general or local; the former giving rise to such diseases as fever and inflammation, and the latter to cephalalgia, jaundice, flatulence, melancholy, &c. Deficiency of motion gives rise to atony, which may also be general or local. The general may be exemplified by such diseases as fainting and prostration, and the particular by various hereditary and chronic diseases.¹ The theory of spasm and atony was borrowed from Glisson, and the various dynamic systems subsequently proposed are almost entirely founded upon it, especially after it had been rendered more definite by Haller's doctrine of irritability; and it is interesting to notice that Hoffmann was aware that a disease which begins with spasm ends generally in atony.² There is no difficulty in recognising here the doctrine of stimulus and recoil which has played so great a part in medical theory. Although Hoffmann attributed to the solids the principal share in the production of disease, he is by no means consistent in this. As Sprengel says: "On croirait réellement entendre parler un partisan de Sylvius, quand on lit tout ce qu'Hoffmann dit des âcretés acides comme causes des maladies. Il jugeait aussi de même que les humoristes à l'égard de la putréfaction, puisqu'il ne faisait pas de différence entre celle qui se développe hors du corps et celle qui naît au-dedans."³

His classification of remedies is very simple. In diseases, either the motion or the matter which is moved may be at fault. As we have already seen, the motion may be excessive, giving rise to spasm; or deficient, causing atony. The diseases which arise from spasm must be met by sedatives, and from atony by excitants or roborants. The matter of the body may be at fault either in its quality or quantity. Imperfections of quality must be corrected by alterants, and of quantity by evacuants.⁴

The metaphysical speculations of Hoffmann can only be regarded in their practical outcome as ingenious devices for excluding the influence of the soul from the theory of medicine; although, when in difficulties, he did not scruple to take refuge in the transcendental explanation which the sensitive soul

¹ "Opera Omnia," pp. 162—164.

² Ibid. p. 169.

³ "Histoire de la Médecine," vol. v. p. 296.

⁴ "Opera Omnia," p. 427.

afforded him. When, however, Hoffmann comes to develop the material aspect of his system, its defects soon become manifest. His theory of life, which is at the foundation of the whole superstructure, is extremely imperfect. He regards life as motion, especially the continual movement of the heart and arteries. I cannot at present criticise this definition minutely; but I may notice that it takes no cognizance of the most distinctive peculiarity of life. It takes no notice of the relation which must exist between the organism and its environment. As Comte says, "The harmony between the living being and the corresponding medium evidently characterises the fundamental condition of life."¹ This defect in the foundations of his system declares itself in his physiology, becomes more apparent in his pathology, and is especially manifest in his therapeutics. His classification of remedies was found far too narrow in practice; and he was compelled to have recourse to a supplemental hypothesis. This was, that the effects of medicines were to be explained by their sensible qualities and natural affinities—a doctrine not unlike the old hypothesis of signatures. He explained the action of wine by supposing it to contain a subtile substance analogous to the nervous fluid, by which it was enabled to act immediately upon the latter.

These few remarks are all that my limits permit me to say upon the system of Hoffmann; but this is less to be regretted, since our present knowledge has in great measure outgrown it. In a subsequent paper I propose to examine another system which maintains its ground in the present day, and which must therefore be examined somewhat more minutely. I allude to that of Hahnemann, which is one of the best (from another point of view the worst) examples of the application of the Geometrical Method in Medicine.

¹ "The Positive Philosophy of Auguste Comte," by Miss Martineau, vol. i. p. 360.

A CASE OF NEURO-PARALYTIC KERATITIS.

BY W. SPENCER WATSON, F.R.C.S.,

Surgeon to the South London Ophthalmic Hospital.

J. O., a Buckinghamshire labourer, nineteen years of age, was half-asleep driving a waggon up-hill on March 27th, 1868. He slipped from his seat and fell with his head directly in front of one of the wheels. The imminent danger aroused him from his day-dreams. He shouted to his horses; they stopped, but not before the wheel had actually come in contact with his head and severely injured it. In consequence of the steep incline, the moment the horses came to a halt, the wheel rolled backwards, and so set the man's head free, just in time to prevent the forcible expulsion of the cranial contents—cerebral or otherwise. He was not insensible at the time, nor afterwards, but was able to get up, and then found that his right ear was bleeding from the severe scraping it had received. He had also bleeding from the nose and mouth, but none from the meatus auditorius; all sensation had gone from the left side of the face, and he had no feeling in it for three weeks after the accident. Ever since he has had palsy of the left side of the face, and has been unable to close either eye completely. Latterly he has had difficulty in masticating in consequence of the food getting between the left cheek and the teeth. His general health, nevertheless, has been unimpaired. During the last week before admission into the hospital (June 24th), his left eye had become inflamed.

Present condition, June 24.—On the left cornea there is a smooth nebulous and distinctly circumscribed patch of oval form, and about half the diameter of a pea in size, occupying the lower and outer quadrant. A zone of vascularity surrounds

the cornea. The eye remains half open and cannot be completely closed. He has no intolerance of light. The left side of the forehead and left cheek are partially anæsthetic, and the eyeball perfectly so. The orbicularis palpebrarum is partially paralysed on each side, and the temporal muscles somewhat wasted. The left cheek is flaccid, and when he attempts to whistle the left corner of the mouth is blown out.

He has been keeping his left eye tied up with a silk handkerchief, and on removing this it is found that the handkerchief had been lying in contact with the cornea and adjacent parts of the eyeball, though the patient was quite unaware of the presence of any irritant body.

The nebulous patch on the cornea, when closely examined, is found to be a superficial ulcer with sharply defined edges and very slightly excavated. It is no doubt due to the irritation caused by the friction of the handkerchief against the corneal epithelium.

Treatment consisted simply in keeping the eyelids accurately closed by means of strips of court-plaster, at the same time giving some simple tonic medicine.

A very rapid healing of the ulcer ensued, and it remained healed in January 1869, when I last heard of my patient. Dr. Grimes reported that he had gained some power over the orbicularis, and that he had had an attack of ulceration of the right cornea.

Remarks.—The two conditions of anæsthesia and the palsy of the orbicularis here united to leave the cornea exposed to external irritants; the constant exposure and possibly the lodgment of some foreign particles on the surface of the eye set up some inflammatory action; with a view of protecting the eye, the patient tied it over with his handkerchief, but the eyelids remaining partly open, the intended protection became an additional source of irritation, and the commencement of ulceration was speedily induced. Complete closure of the eyelids by plaster arrested this destructive process by removing the irritating cause, and absolute rest being thus secured, granulation and cicatrisation went on undisturbed.¹

¹ Virchow remarks in reference to this point:—"A part may be paralysed without being inflamed; it may be anæsthetic without being exposed to this

A remarkable feature of this and all other cases of neuro-paralytic keratitis which I have seen is the absence of photophobia; a symptom so commonly observed in inflammatory affections of the cornea not associated with paralytic affections of the sensory nerves. This seems to indicate that photophobia is a condition of hyperæsthesia of the ophthalmic division of the fifth pair, and that as a consequence paresis of the fifth is inconsistent with it.

As sneezing is occasionally induced by sudden exposure to sunlight, which at the same time causes a kind of temporary photophobia, it has been argued with great plausibility that the nasal twig of the ophthalmic division of the fifth is irritated sympathetically under these circumstances; and that simultaneously with the involuntary closing of the eyelids, the reflex act of sneezing occurs in consequence of an impression conveyed by the sympathetically irritated twig of the ophthalmic.

Until a better theory can be found, it is, I think, justifiable on these grounds, as well as on the results of clinical experience, to regard the presence of photophobia as an indication of an irritable ophthalmic division of the fifth and perhaps of the whole tri-facial, or even of its ganglion and roots. Certainly the absence of photophobia in cases like the one related goes far to confirm this view. The application of narcotics to the parts surrounding the eye has often a wonderful effect in relieving photophobia. This would also point in the same direction; and the same may be said with regard to the beneficial influence of setons and other counter-irritants in the treatment of irritable ulcers of the cornea.

danger. There is always required some special irritation, either of a mechanical or chemical nature, and proceeding either from without or from the blood, in order to produce the peculiar liability." This passage is quoted by Dr. Heslop as well confirmed by a case of disease involving the Gasserian ganglion and causing *complete anæsthesia* of the eye, but in which there was *ptosis* as well. No inflammation of the eye occurred.

ON THE USE OF ERGOT OF RYE IN THE HÆMOPYSIS OF PHTHISIS.

BY DR. ANSTIE.

PART II.

IN the February number of this journal I recorded the results of therapeutic trials of ergot of rye in the hæmorrhage of early phthisis, where the physical signs of disease were slight or non-apparent. I now proceed to describe the results obtained in dealing, by the same mode of treatment, with hæmoptysis occurring as an incident of more advanced lung-disease.

B.—The first group of experiments now to be mentioned consists of trials of the ergot in cases where hæmorrhage was an incident, more or less formidable by its intensity, of a consolidation which from time to time made rapid starts of progress. The cases are three in number. But before describing these facts, I shall make a few remarks on the principles which, as I suppose, ought to regulate the use of hæmostatics in phthisical hæmorrhage.

It is by no means an accepted maxim among authorities on phthisis, that hæmoptysis should always and as a matter of course be suppressed. I need not take up space by detailed quotations from authors; it is well known that very eminent physicians have pointed out the occasional relief to symptoms, or even apparent arrest of the disease, that has followed upon a considerable hæmorrhage, or series of hæmorrhages. Moreover, it is a fact that those cases of phthisis which, in the first and second stages, are attended with a good deal of hæmorrhage, are by no means always the gravest in their general course; on the contrary, it has often been remarked that such a case has been

very slow to arrive at the stage of softening; sometimes it has never reached that stage at all, the patient living a fairly busy life, and dying, apparently, of some other disease. And on the other hand, patients who from first to last have never expectorated a drop of blood, have been known to sink with the utmost rapidity, and with scarcely a single pause in their downward progress.

All this is true enough, and within certain limitations may reasonably affect our practice. But there is one most important fact, long since casually noted, but only of late years appreciated at its just value, viz. that hæmorrhage may itself excite phthisis, and indeed is, to some patients, probably the most potent of all provocatives to that disease. *Phthisis ab hæmoptoe*, i.e. from irritation of the air-cells by effused blood, is now known to be not very uncommon: and the worst of it is, that we have no means of predicting in any given case, the degree to which blood retained in the air-cells may prove irritant.

Such being the facts, it appears indisputable that hæmorrhage should always be arrested unless we have most positive evidence that it relieves symptoms without causing after-irritation. Of course there can be no question about the necessity of arresting hæmorrhage which is so large or so continuous as to form a serious drain of blood. But merely with reference to the possible irritant effects of the residuum left behind in the lungs, the suppression of bleeding seems to me to be absolutely called for in cases where there are as yet but slight physical signs, or none at all: and I am even more strongly convinced that it is our duty to stop the hæmorrhage which occurs late in phthisis, during a rapidly destructive process. In the first kind of instance we may perhaps succeed in excluding the one evil influence without which phthisis would not develop, though the tendency to it might exist. And in the highly irritable condition of rapid softening, I have had conclusive experience of the fatal mischiefs which hæmorrhage will produce.

In the stage of phthisis which is now to be referred to, matters stand rather differently. We are certain that positive physical mischief has occurred, as evidenced by consolidation: and if, along with a tendency to occasional extensions of this consolidation, there is an absence of softening and a clear his-

tory of relief to respiration and improvement in general health after a previous hæmorrhage or hæmorrhages, we may well doubt whether we should be in haste to repress the bleeding if it recurs as a kind of climax to a period of fresh deposition. But even in this stage of phthisis I think that, upon the whole, we should rarely take the responsibility of allowing hæmorrhage to proceed, unless there happens to be a history of like events in the past. Certainly, in neither of the three cases now to be reported did I feel that a passive attitude would have been justifiable on my part.

Case I. was that of a tinman, aged 37, a very intemperate man. He was in the habit of drinking half to three-quarters of a pint of gin daily, besides a variable amount of beer. The hæmoptysis had come upon him suddenly; a large gush of bright blood followed a coughing fit the day previous to my first visit, and recurred in the evening in the same sort of way. He was a middle-sized but powerful-looking man, though with the marks of drinking plainly set upon his face. He said that he was rather liable to colds, attended with violent spasmodic coughing, and that he had had such a cough for the last week or two. He also told me that he had several times suffered from attacks of very sharp stitch-like pain in the left side, which would last perhaps for two or three days, on and off; and that he felt "feverish" and bad at such times. On examining his chest it was evident that this man offered a good example of the commonest form of alcoholic phthisis, and that this affection had lasted some time. The left chest was markedly contracted; the infra-clavicular region was much sunken, and there was a considerable depression at the site of the old stitch-like pains; over the larger half of this side anteriorly, and to a less extent posteriorly, inspiration was harsh and jerking, expiration decidedly prolonged. Percussion over the same regions elicited a dull sound in patches; and, indeed, nearly the whole left chest was less resonant than the right. The patient was stringently ordered to abstain completely from alcoholic drinks, and to remain quiescent in the horizontal position; 2 grains of acetate of lead in pill, with $\frac{1}{4}$ -grain of opium, and 2 drachms of infusion of digitalis in mixture, were to be taken every six hours. There

was no recurrence of the hæmorrhage during the next three days, but it then returned, in rather large amount, twice within twenty-four hours. On the second visit the man looked much worse; the complexion was of a streaky red and yellow; the pulse 98; and the temperature (2 P.M.) was $101^{\circ}2$: he complained of continuous and severe pain at the old place in the left side. Forty minims of liquid ext. ergotæ were ordered every four hours, and the effect was decided: the excited pulse subsided, the pain in the chest abated, and there was only one slight recurrence of the bleeding during the next week. On his appearance at the end of that time at the hospital, the patient looked greatly better: he continued to take the ergot during three weeks. Examined at the end of that time, he was found to present just the same physical signs as at first; but his general health had greatly improved, the cough had ceased, and he was not conscious of any pain or inconvenience in the chest.

Case II. was that of a blacksmith, aged 24, intemperate, who had been working with increasing difficulty at his trade, owing to a feeling of dyspnœa which had troubled him for about ten months. His father had died of consumption at the age of 36; he had himself suffered from cough and a sense of oppression at the chest, which had never left him after a severe cold, with bronchitic expectoration, which attacked him in the beginning of the winter 1870-1, and was rather worse than usual when he first came to me in March 1872. At this time there was a considerable amount of catarrhal bronchitis: rhonchus and sibilus, mingled here and there with coarse moist râles, were scattered over a large part of both lungs; there was also slight fever and somewhat quickened pulse. The patient was treated with liq. ammon. acet. \mathfrak{z} ij and decoct. senegæ \mathfrak{z} j ter die, and desired to remain indoors. At his next visit, four days later, the bronchitic sounds had nearly vanished; the sputa were less frothy and profuse, but there were pain and burning soreness under the sternum and in the right infra-clavicular and mammary regions; the temperature was found to be $100^{\circ}4$ (at 1.30 P.M.). A more careful examination of the chest now showed that there was less complete expansion of the upper portion of the right chest than of the left; and about two and a half inches below

the right clavicle there commenced a patch of rather marked dulness, which occupied an irregularly shaped space, the total area of which may have been equal to that of a crown-piece. Breathing was harsh (indeed semi-tubular) at this place, and expiration much prolonged. At the posterior aspect of the same lung the same percussion and auscultation sounds were heard over a rather smaller space and a little lower down. Four days later the patient again presented himself. It appeared that, on the evening before, he had been seized, rather suddenly, with pain under the left mamma, and short breath: an hour and a half later he coughed a good deal, and then his mouth was filled with very bright red blood; this happened three times more in the course of the night. About 4 A.M. he fell into a heavy sleep that lasted till 7.30, when he awoke bathed in perspiration, and coughed up about a tablespoonful of rather darker blood than that which had come at first. When he came to the hospital he was pale (but for a small red spot in each cheek), trembling, and very anxious-looking; pulse 108 and very weak. He said that on his way to the hospital he had to sit down several times on doorsteps, and that he had been coughing small quantities of blood all the morning. The chest was carefully examined, and the left lung was found to be entirely free from signs of disease; its sounds were puerile, as might be expected from the state of the other lung. In the latter, the old harsh sounds were only very imperfectly heard, being much mixed with and confused by rather large bubbling râles. The coughing up of blood, though in small quantities, was so persistent that—taking his history into consideration—I was much inclined to believe that an aneurismal dilatation of one of the pulmonary vessels had given way. As he had been taking the acetate of lead and sucking pieces of ice up to the last moment with apparently no effect whatever, I now ordered 40 min. of the liquid ext. ergotæ every four hours, and particularly desired that when the cough came on he should be raised (not lift himself) and assisted to lean forwards, so that, as far as might be, the bloody sputa might be expectorated rather than retained on the lung. When I saw him three days later, his appearance was remarkably improved, though he still looked pale and weak. There had been no hæmorrhage worth mentioning after the

fourth dose of the ergot, and from the first it seemed to decidedly check the bleeding. He continued taking the ergot steadily for a week, at the end of which time he was probably in the same state as before the illness; that is to say, his right lung remained in a state of what might be called chronic "fibroid phthisis," with scarcely any active processes going on. For some three or four months I kept this man in view, and the hæmorrhage did not recur. He took some cod-liver oil, and was fairly abstinent from drink as long as I saw him. He disappeared from my observation about nine months ago, and has not applied to me again.

Case III. is that of a single woman, aged 40, a machine-sempstress. She applied to me in great alarm, on account of a series of bursts of hæmorrhage, preceded by only moderately severe cough, which had come upon her during the last four days: on some nine or ten occasions she had brought up quantities varying from a mere spot to a tablespoonful or more. Finding that her menstrual flow had been somewhat rapidly diminishing, I hoped that the incident was only temporary and unimportant: but on examining her chest I found scattered patches of decided consolidation in both lungs. Alum was prescribed in 10-grain powders every four hours, and continued for a week, but with no success: the ergot, in the usual doses, was then ordered, and the hæmorrhage diminished at once, and disappeared in the course of three or four days. I think it probable that the severity and obstinacy of the hæmorrhage were in some measure influenced by a disturbed state of circulation due to a rather brusque process of uterine involution; but it should be mentioned that the period of pulmonary hæmorrhage did not correspond with the usual dates of this patient's menstruation.

C.—The last part of this inquiry concerns the administration of ergot in cases of advanced phthisis where a rapidly advancing destructive process cuts into vessels of considerable size which had remained fully pervious. The emergency may be extreme and most alarming; the hæmorrhage being considerable in quantity, and liable to recur constantly: moreover, the irritative

effect of the effused blood in the air-cells is apt to be extremely severe; in fact, may produce pneumonia which kills the patient in a very few days.

1. The first case of this advanced kind in which I employed ergot was indecisive, though encouraging, as to the results. The patient was a personal friend, whose illness I had watched during more than three years. Hæmorrhage had been by no means a conspicuous feature of his case: it had occurred only occasionally and to an unimportant extent in the earlier stages. The disease was chiefly, if not altogether, in the right lung. He had been going steadily down-hill for about six months, with continuous evidences of softening, till, in the last week of 1871, he was attacked with violent and repeated hæmorrhages of florid blood. His usual remedy, glycerine of gallic acid, seemed to have comparatively little influence on the bleeding, and I accordingly employed ergot. I scarcely remember why it was that in this case I used the tincture, instead of the liquid extract which I generally used, and which I believe on the whole to be considerably more efficacious. However, I had no doubt at the time that the medicine exercised a really controlling influence over the bleeding, which immediately diminished very much. Unfortunately the mischief was done: the effused blood excited intense pneumonia, which carried the patient off a week later.

2. In a case which occurred very soon after this, I was called to a gentleman, aged 47, who had suddenly lost a "pint" of bright red blood. This was his first hæmorrhage. It appeared that he had suffered undoubtedly consumptive disease (consolidation of both apices), for seven or eight years; but no softening had occurred until a month previously to the bleeding, when he had taken a violent cold, which at once lighted up active mischief. Already there was a cavern of considerable extent in the right upper lobe, and patches of subcrepitation in various parts. Before the hour appointed for the visit arrived, the hæmorrhage recurred to the extent of a teacupful, and the patient went on spitting some bright blood after every cough. Here the liquid extract of ergot was at once employed in 40-minim doses: the hæmorrhage was markedly influenced by the

first dose, and stopped entirely after the second. So far as I am aware, this patient (who died about three months later) never had any recurrence of the bleeding.

3. A case occurred in the out-patient practice. The patient was a woman aged 60, much emaciated, who had been a sufferer from what she called "asthma" for more than twenty years. The story appeared to be that of chronic bronchitis passing at last into phthisis. There were extensive consolidation in the left lung, and patches of dulness in the right; moreover, there was a well-marked cavern in the left upper lobe. Hæmorrhage had never occurred till a week previously, but had recurred several times since then. Forty-minim doses of the liquid extract were given, and the hæmorrhage quickly stopped.

4. Against these favourable examples of the action of ergot in hæmorrhage of advanced phthisis, I must set the case of a patient who was recently under my charge in Westminster Hospital (Burdett Ward). Here the hæmorrhage was continuous and large in amount (taken altogether), and after various other remedies had been tried in vain, a fair and persevering trial was given to ergot; but the hæmorrhage was not in the least affected. Acetate of lead finally stopped it.

I am aware that it is necessary very carefully to analyse such facts as the three series of cases which have been now recorded, before proceeding to draw any positive therapeutic conclusions from them. And as that cannot be done in a very short space, I must reserve my final remarks for a future occasion.

(To be concluded.)

CLINICAL ILLUSTRATIONS OF THE VALUE OF PHOSPHORUS IN CERTAIN FORMS OF DISEASE OF THE NERVOUS SYSTEM.

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SOME years since I endeavoured to trace a connection between chemical constitution and therapeutical action. That the one is governed by the other I entertain no doubt, and I confidently anticipate that at some future time, probably not very remote, it will be possible to predict the effects on the animal economy of any given body from its physical properties and chemical constitution, as indeed we have in a few instances seen, *e.g.* in the case of chloral hydrate by Liebreich, and of many anæsthetic gases by Dr. B. W. Richardson.

A corollary of this hypothesis is that chemical groups will form therapeutical groups; or, in other words, that substances allied in chemical properties will have similar physiological and therapeutical actions: or, if such be not the case, the failure will be capable of explanation on chemical grounds. This secondary hypothesis I have brought to the test of experience in the two groups of which iron and arsenic are the chief therapeutical representatives; and I have in the Clinical Society given numerous cases illustrating the curative effects of manganese and nickel in anæmia, and of phosphorus in certain skin diseases. But arsenic, besides its well-known effects on perverted nutrition in the skin, is frequently a most valuable remedy in affections of the nervous system characterised by deficiency of nervous energy; and it early occurred to me to avail myself of the more powerful agency of phosphorus in this class of cases. Until recently, however, it has scarcely answered my expectations.

This I believe to be explained by the difficulty of administering it without destruction, or at any rate impairment, of its activity by oxidation. When I gave it to out-patients at St. Mary's Hospital, the subjects of my earlier experiments, it was dissolved in almond or olive oil, and suspended in mucilage, in which it remained unchanged for a time. But this forms a nauseous mixture, and oxidation slowly takes place. Since that time I have given it in the form of pills with some extract, and sometimes dissolved in cod-liver oil. This last medium, however, is apparently the most treacherous of all, since in the brown oil the characteristic odour of phosphorus disappears at once, showing that oxidation has taken place: whether this occurs in the purer clear oil, I do not know. Pills also must undergo rapid deterioration. Fortunately a method has recently become available by which phosphorus can be given in a form at once active and inoffensive, namely, dissolved in oil or lard, and enclosed in a gelatine capsule; the dose is about $\frac{1}{10}$ of a grain, and it may be taken two or three times a day, always after food. In the following cases this has always been the mode of administration.

I.—*Epileptiform Vertigo.*

J. B., aged 43, but looking older, came under my observation on September 20, 1872. He had enjoyed good health till the latter part of the year 1869, when he began to suffer from attacks of giddiness, which came on suddenly and were followed by vomiting, after which he lay in a sort of stupor for two or three hours, suffering from a heavy drowsy feeling which he could not shake off. There was no unconsciousness during the attack, and no convulsion. When the drowsiness passed off he felt better, but shaken. Attacks of this kind came on every two or three weeks, or whenever he was excited. He was also told by his medical attendant that he had gravel; on what grounds I could not ascertain. At this time he was living in Australia, where he had been for eighteen years, and after suffering for seven or eight months he was advised to return to England, which he did in May 1870.

The attacks ceased during the voyage home, and he was free from them till February 1872. It was a great sacrifice to him to

leave Australia, and in attempting to establish himself in business after his return he experienced heavy losses and great anxieties, to which, with hard work, he attributed his breakdown. The giddiness and vomiting returned at the time named, but later the vomiting was not constant. In the attacks of giddiness he had a feeling as if he was going down a precipice, and they were attended with emotional manifestations which he called hysteria. When he first consulted me they came on three or four times a week, and he had moreover lost confidence in himself; liked to have railings close at hand as he walked about; felt ready to fall. He did in fact stagger very frequently, and I have more than once seen him reel as if drunk, and hold fast to railings to prevent himself from falling. Notwithstanding all this, he was still working hard at elaborate accounts, but had recently begun to get confused, and whenever the giddiness was bad he was quite unable to give his attention to business of any kind. He had been under medical treatment for some time when I first saw him on September 26.

He was thin, rather pale and sallow, and partially bald; looked older than his years, and had an oppressed expression. There was a marked difference in the tint of the face and of the upper part of the forehead, as if the face had been tanned by exposure to the sun, but the line of demarcation was extremely irregular, and did not correspond with the limits of protection by the hat. It formed an irregular serrated line across the upper part of the forehead, and on the right side ran up to the roots of the hair; it was more distinctly and deeply brown along the margin than lower down on the face, and the temples were deeply stained. The discoloration was always more marked when he was worse in health. There were no stains elsewhere on the skin, and none on the mucous membrane of the mouth.

The tongue was furred; the bowels confined; the urine dark coloured, had a high specific gravity, and contained urates, crystals of oxalate of lime in great abundance, and some free uric acid.

I first gave him iodide of potassium with citrate of iron and quinine, and an aperient pill. This did no good whatever, and on Oct. 1st I prescribed liq. pot. arsenitis ℥v, with pot. iod.

gr. iij, and spt. ammon. aromat. ℥xl, three times a day, continuing the aperient pills. After a fortnight's trial of this he was decidedly better, but suffered from coryza, which I thought might be due to the iodide of potassium. This was accordingly omitted on Oct. 16, and the dose of liq. pot. arsenitis was made six minims. The improvement continued, but the treatment had to be suspended on Nov. 5, on account of an attack of bronchitis. The little ground gained was soon lost, but on Nov. 13 the bronchitis had so far subsided that attention could again be given to the nervous symptoms. Having seen that arsenic was useful, I now gave phosphorus, first twice, then three times a day. He improved rapidly and decidedly, and, when I heard from him on Jan. 20, was quite well. In March he again consulted me for dyspeptic symptoms: the change for the better in his appearance was remarkable.

I ought to add that the ophthalmoscope showed a normal condition of the optic disc and retinal vessels.

II.—*Severe Neuralgia with peculiar complication.*

The patient, a lady aged about 25, had suffered more or less from sick-headache or migraine, from girlhood. After her marriage she had children rapidly, and being weakened in consequence, the attacks had become more frequent and violent, and had changed somewhat in character, having assumed more the character of distinct neuralgia of the first division of the fifth nerve, which, as Dr. Anstie has pointed out, is a common transformation. Change of air afforded relief from the attacks for a while, but as soon as she had been a short time in any place in England they began to return. She enjoyed a more complete immunity when at sea or abroad, and during two or three journeys to the Orkneys, and in one to Malta, Egypt, and other parts of the Mediterranean, and for some time after her return, she had not a single attack. In November 1872, however, she was suffering more than ever: she scarcely had a day free from pain, and twice a week, or even more frequently, was prostrated by a severe attack. These began with pain in the brow, extending over the side of the head, and then shooting into every limb. Usually there was violent retching, but not always. After the

violent pain she was left in a state of extreme prostration, almost amounting to insensibility, which lasted for the remainder of the day.

A complication had been gradually coming on, which she called indigestion. There was some gastralgia, but what she most complained of was, that on beginning to eat she lost all power of attending to what was said or done, and became unable to take part in, or even to follow, the simplest conversation. This was worse at lunch than at dinner, and had become so bad that she was compelled to withdraw from all society at this meal, eat it alone, and then lie down; she was beginning to be afraid also of dining with friends. The neuralgia had been treated in various ways, but for some little time she had been allowed to diminish the quantity of food on account of the dyspepsia, and she had taken carbonate of potash for the relief of discomfort attributed to acidity. I attributed the mental confusion at meals to cerebral anæmia, caused by diversion of blood to the gastric mucous membrane for the work of digestion, and explained the lesser degree of this at dinner than at lunch by the fact that the food taken at the earlier meal had become available for the support of the nervous system at the later.

Of course it was necessary here to do more than give drugs. I ordered breakfast to be taken in bed, and to be followed by some repose; at 11 or 11.30 A.M. a cup of strong beef-tea; the luncheon to consist chiefly of meat, with Burgundy or porter; milk with cocoa to be taken instead of afternoon tea. Dinner needed no special regulations. A little beef-tea was to be taken at night. The phosphorus was ordered to be taken twice a day with a teaspoonful of cod-liver oil, after lunch and dinner.

Four days after the commencement of this treatment the patient was entirely free from pain, and so remained for three weeks, when, according to my directions, the phosphorus was to be suspended for a week. She was at this time entertaining a large party at her husband's country house, giving dinner and ball. In three or four days she began to have neuralgic twinges, upon which she at once resumed the phosphorus, which she still takes with occasional intermissions. She has had no attack now for more than three months, which is unprecedented in her experience, and she is better in all respects.

III.—*Nervous Break-down from overwork, &c.*

Another case, of a different character, is that of a gentleman aged about 35, a merchant. He lives a short distance out of town, going into the City daily. Unfortunately several unfavourable hygienic conditions are concentrated round his residence. The soil is clay; the house is near the foot of a hill, and on the wrong aspect, so that in winter it is reached by the sun for a few hours only on the finest day. It will be easily understood that a winter such as that through which we have just passed, which has been remarkable for long-continued prevalence of wet weather, was especially trying in a situation naturally damp. Near the end of November one of my patient's children had typhoid fever, which gave him much anxiety and caused him loss of rest; it robbed him also of fresh air and exercise, and kept him much in the house. Under this he broke down; his sleep had for some time not been very good, and he now lay awake almost the whole night. He was often giddy, had severe pain in the head, and the top of the head was always hot; he frequently had palpitation of the heart, tightness of the chest, and a sense of impending syncope; felt destitute of energy, and unable to give his attention to anything, the least effort in this direction giving rise to a painfulness in the head, and throbbing sensations. He often felt feverish in the night, and perspired rather freely towards morning; but the temperature, which was carefully taken by the patient at various times, was never above the normal standard. The appetite was not good, but he was able to take a fair amount of food: the tongue was furred; the bowels rather confined. Pulse soft, compressible, and quick or sharp. Pupils very large.

The symptoms were those of nervous depression, and were such as often accompany, in a greater or less degree, atonic dyspepsia, and what we are accustomed to regard as derangement of the liver. Dyspepsia and its discomforts were, however, not prominent. I first prescribed an aperient and quinine, which was pushed to doses of six grains. It was necessary to procure sleep, and for this purpose chloral was given, but with very inconstant effect, and occasionally an opiate was required. Iron was shortly added to the quinine, and for a time small doses of pil.

hydrag. and ext. colchici, with pil. rhæi co. and ext. taraxaci, were given at night. He was a little better for this treatment. I attached most importance, however, to change of air, and sent my patient and his child to Hastings for a fortnight. He soon began to enjoy better rest, but, though much benefited, did not derive all the good I had expected from his visit. This was partly due to an unfortunate chapter of accidents. He was kept awake one or two nights by storms; was alarmed by an attack of vomiting and diarrhoea, with high temperature, which was induced in his little boy by an imprudence in food; and on another occasion he over-exerted himself and brought on an attack of palpitation, by hurrying to escape a shower. On his return he attempted to resume his work, but notwithstanding great care and shorter hours of business, he began at once to suffer from his old symptoms—headache, oppression, low spirits, want of energy, palpitation, &c. I was particularly struck with the character of the pulse, which was that of extreme arterial relaxation, the pulse-wave being sudden and short, the artery in the interval perfectly flaccid. I now gave strychnine and iron, and as I considered that the want of vascular tone was not only an indication of nervous weakness, but in itself a source of mischief, I added ʒij of infusion of digitalis for the purpose of inducing contraction of the muscular walls of the arteries. He was better, and was able to go to his office, but had frequent headaches, remained entirely destitute of energy, slept badly, and on any excitement had a return of his old symptoms in full violence. Both his friends and he himself were becoming alarmed, and it seemed as if nothing short of a prolonged absence from business, which would have involved serious sacrifices, would restore him to health. I now began to give the phosphorus capsules, at first one, then two per diem, after meals: this was on January 18. From this time he gradually improved, and when he reported himself on March 3, said that for a fortnight or three weeks he had felt all his usual energy, and had ventured to put himself in the hands of his dentist, which had cost him two or three nights' rest. He had not, however, altogether recovered his usual healthy appearance. On March 17 he was still better, both as to strength, energy, and looks, notwithstanding unusually trying circumstances.

I have now under my care a lady suffering from atonic dyspepsia, with low spirits and apprehensions of all kinds. When I first saw her she indulged in a fit of weeping before she could tell me what was the matter with her. Here I gave, in addition to the strychnine and acid which I find most useful in such cases, a phosphorus capsule once a day, and the improvement has been much more rapid than is generally seen.

I have also given phosphorus with obvious advantage in cases of syphilitic disease of the brain giving rise to epilepsy, after a course of iodide of potassium in large doses; this remedy often leaving the nervous centres in a weakened condition.

I do not pretend to explain the action of phosphorus. The popular *rationale* is, that as phosphorus is found in the nervous structures, the beneficial effect is produced by supplying this element for their nutrition. We might with equal reason try to live on charcoal because carbon is a constituent of the tissues and its oxidation a source of heat. The influence of phosphorus and arsenic on the nervous system is analogous to their influence on the nutrition of the skin, which is seen not only in the case of cutaneous skin diseases, but in the production of zoster by arsenic. Carried further, the same action produces the granular change in the muscular and glandular structures seen in cases of poisoning by these substances.

It has often occurred to me to hear it proposed to give phosphorus in the form of phosphoric acid. The absurdity of this will be seen, if we substitute sulphur for phosphorus, and speak of using sulphur and sulphuric acid indifferently.

Reviews.

Dei Solfiti ed Iposolfiti nella Cura delle Febbre intermittenti.
Memoria del Dott. Giovanni Faralli. (Prize Essay of the
Reale Istituto Lombardo di Scienze e Lettere, 1872.) Milan :
Bernardoni. 1872. Pp. 128.

THIS brochure forms a not unimportant contribution to the great question—one of the most pregnant with consequences for therapeutics that has ever been raised—whether the “zymotic” fevers can be proved susceptible of a rational treatment based on an *antizymotic action of remedies*. In selecting intermittent fevers as the class of zymotic diseases, and the hyposulphites as the particular remedies for discussion, Dr. Faralli was doubtless influenced by the prominence given to this point of the great general question by the researches of his countryman, Polli. But he has taken care to show that he possesses an intelligent acquaintance with the whole question: and from the candour and the roughness with which he has approached the subject of inquiry, as well as the marked ability with which he expresses his views, we feel little doubt that Dr. Faralli will, at no distant future, stand out as an important representative of that medical progress which is becoming rapidly more conspicuous in Italy.

As regards the particular case of intermittent fevers and their treatment by the sulphites and hyposulphites, Dr. Faralli arrives at the following conclusions:—(1) That it is not demonstrated that intermittent fevers are of a zymotic nature. (2) That the sulphites often cure intermittents, but their action is neither so prompt nor so constant as that of the preparations of bark. (3) That their action seems to depend on their reducing (deoxidising) rather than on their anti-fermentative property. (4) That the single (peculiar?) result due to them, and supported by the majority of observations, is the greater promptness with which they appear to relieve abdominal symptoms. (5) That their too long-continued employment causes a certain degree of anæmia, and therefore favours the development of the malarial cachexy. (6) That their prophylactic virtue, imagined *à priori*, is not supported by exact observations, as is that of sulphate of quinine. (7) That in the cure of intermittents, sulphites are inferior in efficacy to bark and its derivatives, and are only worth trying

when the latter have failed. (8) That arsenical preparations, although they need rarely be employed in the treatment of paludal fevers, are nevertheless more useful in combating the malarial cachexy than are the sulphites. (9) That therefore, of three methods of treatment generally adopted for periodic fevers, the sulphites, which are manifestly inferior to quinine both as prophylactics and as direct remedies, are even to be ranked as less efficacious than the preparations of arsenic.

We need not say that the above conclusions are very important if they can be justified: and we may at once say that we do not think that the talented author of this essay has fully appreciated the strength of some of the arguments of his opponents; especially he scarcely seems aware of the remarkable *primâ facie* strength of the case which has been made out by various able observers for the origin of zymotic diseases from so-called "germs," though we do not profess ourselves adherents of that theory. In the short space, however, which we can give to the notice of his book, we prefer to limit ourselves to a glance at his argument in favour of the opinion that the sulphites and hyposulphites produce their beneficial action solely in virtue of their deoxidising power. It is here, in fact, that he speaks on the ground of original research, his essay being otherwise too exclusively based on the criticism—learned though it be—of other writers; a fact for which he is blamed in the report of the adjudicators prefixed to his essay. Dr. Faralli has personally observed that the sulphites and hyposulphites exert a remarkable influence on the temperature, in all acute pyrexial diseases, without in any way altering either the general course of the disease or the phenomena—*e.g.* the pulse—of the pyrexial state: and he thinks the action is analogous to that of alcohol, which, as Bouvier has shown, may reduce febrile temperature without altering the heart's action; and which produced an extraordinary fall in the temperature of an animal that had been poisoned by the injection of putrid matters into a vein, without at all retarding death. We are bound to say that he seems to us to state the matter too roundly when he says that the influence of sulphites in fever is only due to their heat-lowering power, and that this again is only due to their deoxidising power. The leap from his facts (including the experiments of Kletzinsky) is too great. We say this certainly without any special predisposition to believe in the utility of sulphites in fever: for at the time of Polli's original and very startling statements we personally made a good many experiments with these remedies, which yielded no very encouraging results. And when he makes the inference that, since even in common fevers the sulphites only relieve the one symptom of heat, much more will they prove ineffectual in the treatment of

such diseases as the intermittent fevers, we cannot help remarking that, to give this observation any weight, he ought at least to have considered the question whether it is certain that the sulphites have not some action upon the central nervous system, by which they might prove more, and not less, effective in malarial than in common pyrexia.

However, we repeat that this book is a clever and (from the critical side especially) a useful contribution to the great controversy about the origin and cure of fevers. The whole question of the action of the sulphites ought certainly to be re-investigated in this country, with reference to pyrexial diseases of all kinds.

A Handbook of Medical Electricity. By HERBERT TIBBITS, M.D. Lond., &c. London: Churchill.

DR. TIBBITS has written a valuable book, and has put it before the profession with a modesty and candour which are very pleasing. He professes not to attempt originality, but simply to condense into a manageable compass the essentials of medical electricity—that is to say, the facts as to which all respectable authorities are agreed—and to give an explicit and detailed account of the manner in which the various kinds of electricity may be used in particular diseases. There is not a word of exaggeration or of fanciful hypothesis in the book; and, above all, there is not the least suggestion that there is after all a mystery behind, and that the reader would do well to come to an expert for advice. On the contrary, everything is made so clear that any practitioner, whether he previously knew anything of electricity or not, may from this book at once begin the practical use of it. If there be any lingering doubts in the minds of some ultra-conservative persons as to the practical value of electrical treatment, this book should dispel them. The sceptics in question are, for the most part, persons whose scientific education has not been equal to their success in acquiring practice; and it would doubtless be asking too much to expect them to puzzle their unhappy brains with the elaborate works of Ziemssen, of Duchenne, and many others that could be named. But the publication, in quick succession, of Dr. Reynolds's excellent little volume of clinical lectures on electricity, and now of Dr. Tibbits's book, takes away the last shadow of excuse from those who neglect to afford the benefits of electricity to those of their patients whose cases demand its use. With Reynolds and Tibbits in his hands, the busiest practitioner can without difficulty learn how to effect a large amount of good which he was previously quite unable even to attempt.

We need not analyse Dr. Tibbits's book, which speaks for itself, and ought to be in everyone's hands. One point of interest, however, we cannot but refer to; namely, the reference which the author makes to the so-called "galvanisation of the sympathetic." He does not deny that certain highly peculiar effects are obtained by the application of one electrode to manubrium sterni (or the sixth or seventh cervical vertebra), and the other deep in the auriculo-maxillary fossa; but he gives an urgent caution, which he italicises, against carelessness in its use. We have reason to believe that Dr. Tibbits might have gone further; for, unless we are misinformed, the result of very patient and long-continued trials of this method by several of the staff of the Queen-square Hospital has been to throw great doubt on the correctness of the statements so freely made in various books, as to the therapeutic virtues of galvanisation of the sympathetic, while abundantly illustrating the dangers of this method when used with anything but the greatest caution. Our own experience has been altogether similar; and we confess it is with great trepidation that we reflect on the considerable number of constant batteries which by this time have probably been brought to bear upon the cervical sympathetics of our countrymen. The more anxious we may be to see the legitimate uses of electricity recognised and employed, the more earnestly would we deprecate the rash and inconsiderate application of its more powerful forms.

We see that Dr. Tibbits has a good deal to say on behalf of Franklinisation, or the employment of static electricity from the revolving glass plate or cylinder. At the same time he admits that there is great trouble in this method: and we must say we cannot anticipate that it will ever come into general use, so great is the worry and waste of time involved in keeping the apparatus perfectly dry. This is a pity, for there are some cases—notably hysteric aphonia—in which Franklinisation is an exceedingly valuable method of treatment.

We have but one fault to find with Dr. Tibbits, namely, that he has been too modest and diffident in speaking for himself. In the important post of electrician to the Queen-square Hospital, he has possessed unequalled opportunities, and must have accumulated a large stock of experience, including, doubtless, not a few facts which are perfectly unknown to the profession. We think that he might well have stated any such observations, at any rate in an appendix. However, that can still be done in the next edition, which will certainly be called for shortly.

Clinical Lecture on Lithotrity. By SIR HENRY THOMPSON,
(British Med. Journ., March 22.)

SIR HENRY THOMPSON has, for the satisfaction of the profession, explained (in a clinical lecture which evidently bore pointed reference to the case of Napoleon III.) the grounds upon which his peculiar views of the feasibility of lithotrity in old-standing cases, and even in persons of advanced years, are based. One question which was left in a very unsatisfactory state by the bulletin on which we commented (in the February *Practitioner*) is now answered provisionally thus:—Lithotrity, in persons of advanced years, who have a large and probably long-existent calculus, is full of risk: but in the case where the stone is *soft*, there is so considerable a chance of success, *in thoroughly skilful hands*, as to justify a surgeon of first-rate ability in running that risk, where he thinks the motive adequate. There can be no doubt that if anyone in the world be justified in taking that responsibility, it is Sir Henry Thompson; and we are glad that in the lecture we refer to he has taken the manly and sensible course of saying, in so many words, that he is not to be judged on the same level with average lithotritists. That is unquestionably true, and we are chiefly anxious that the average lithotritist should take the truth to heart, and hold his hand from rash procedures based on the idea that as “surgical kidney” is undiagnosable (a point as to which there is still very much to be learned), every surgeon is justified in running any risks which he may think fit to incur.

Clinic of the Month.

Prophylactic Treatment of Scrofulous Glands.—In the *Medical Times and Gazette* for March 1, 1873, is contained an abstract of a paper by Hueter, of Greifswald, published in the *Klinische Vorträge* of Volkmann. In this Professor Hueter maintains that a scrofulous individual is one who is liable to a repetition of ordinary inflammatory processes, which at the same time tend to spread locally and to be indefinitely protracted in their course. He would refer these liabilities entirely to a peculiar anatomical condition of the skin and mucous surfaces, and of the lymphatic system, frequently and familiarly expressed by a delicate or pasty appearance, especially in children. There is, he contends, no specific scrofulous poison. The culminating point of scrofulosis is when the enlarged glands in the neighbourhood of the superficial inflammation become cheesy. Scrofula now becomes dangerous to life by presenting a source of tubercular infection. Hueter goes on to say that the resolution of a caseous gland is very rare. More commonly the gland becomes the seat of sub-acute suppuration, ending as a rule in the evacuation of a cheesy matter and the formation of a fistula. But instead of this protracted course there may be the rapid and certainly fatal termination first mentioned; either before or after the opening of the abscess, fever with dyspnoea or head symptoms may suddenly inform us that the scrofulous patient has become tubercular and is dying. The tubercles have been developed from granular particles which have entered the circulation from the caseous gland through the lymphatic paths opened by the suppuration, and have become impacted in the capillaries or *saftteonälchen* of the lung or brain, or some other part of the body. The practical conclusions which Hueter draws from such considerations as the preceding are, that besides treating the scrofulous habit and the local inflammation, we are bound to do more to those glandular sources of infection than has hitherto been attempted. If they do not resolve with general treatment—as we should give them a chance of doing when they are small—and if iodine injection (which may be tried in some cases) has failed, then we must use iron—"not in

solution, but in the shape of a scalpel." The enlarged gland is to be excised. The operation is not difficult; the gland is easily enucleated when once its surface is freed. Hueter never had severe hæmorrhage, never lost a patient out of many, and declares that recovery is speedy. The most urgent indication for excision is the advent of suppuration. Should the abscess have formed, it must be freely opened, after which, if a fistula remains, the gland must be extirpated. The arguments in favour of the removal of scrofulous glands apply with equal force to the speedy operation in orchitis, fistula in ano, &c., in which cases also Hueter would recommend cauterisation after section. As for the glands of the mesentery and bronchi, and the foci of scrofulous pneumonia in the chest, they are beyond the reach of the surgeon, and must remain, it is to be feared, as a constantly threatening source of general tuberculous infection.

▷ **Treatment of Traumatic Tetanus.**—In a paper read before the Surgical Society of Ireland, Mr. Kelly brought this subject under discussion. He reported the details of a case of a man who had a compound comminuted fracture of the left leg, and who went on well to the eleventh day, when fluctuation was detected; a poultice was applied, and the matter escaped. On the following day tetanus set in. Three days afterwards an incision was made down to the fracture, and a spiculum of bone removed from between the two bones, where it was firmly impacted. The structures were partly sphacelated. One-grain doses of sulphocyanide of potassium were given every hour, with a view of destroying the irritability of the muscles and thus diminishing the waste of tissue, until curara could be procured. It lessened the frequency and force of the spasms, and enabled the patient to open his mouth, whilst it relieved the epigastric pain. Curara was administered on the third day in doses of 1-32nd of a grain; it also diminished the pain and relieved the spasm. The spasms occurred every ten or fifteen minutes. They were frequently aborted by a few inhalations of chloroform, which notably prevented those induced by voluntary efforts to swallow. The patient died on the fourth morning of the tetanus. Post-mortem examination showed that the posterior tibial nerve was hypertrophied and congested for about two inches on the proximal side of the fracture, and very near the point from whence the spiculum of bone had been removed. The cutaneous branch of the musculo-cutaneous nerve was implicated in the slough, and for some distance stained of a cream colour. The theca of the spinal cord was moderately distended with cerebro-spinal fluid, and the cord, though generally appearing to be healthy, was congested on its posterior surface near the roots of the sacral nerves and on the

anterior aspect of the dorsal region. Microscopical examination revealed some congestion of the grey matter, with softening in the cervical and lumbar enlargements, and a spot of blood near the cervix of the posterior corner in the former enlargement. Mr. Kelly then proceeded to consider severally the functional, structural, and zymotic views of the causation of tetanus, and finally asks, but does not answer, the questions whether amputation be justifiable in any case of tetanus; and what are the special symptoms which would indicate or contra-indicate this procedure. (*Medical Press and Circular*, March 5, 1873.)

Treatment of Colles's Fracture.—Dr. Alexander Macdonald quotes various authorities to show that the seat of the fracture is about an inch above the styloid process, and generally transverse; occasionally, however, presenting some degree of obliquity in its course either downwards and inwards or downwards and outwards. He then proceeds to point out that the radius presents a normal curvature anteriorly, that the direction of its carpal extremity is forwards and inwards, and that the difference in length between its anterior and posterior surfaces amounts on an average to half an inch. On the occurrence of the accident the following results appear: the natural concavity of the radius is lost; its distal extremity, with the carpus attached (in consequence of the unopposed action of the supinator and long extensors), is carried backwards, outwards and upwards, while the length of the bone anteriorly is augmented in a ratio corresponding to the interval between the fragments, and the interosseous space is diminished by the approximation of the upper fragment towards the ulna by the pronator quadratus. The points to be attended to in the treatment are, first, to restore the form of the radius; secondly, to bring back its carpal extremity to its proper aspect *forwards and inwards*; and thirdly (as a consequence of the preceding steps), to remove the obstacles to the reunion of the opposed surfaces, and if possible secure the normal length of the bone before and behind. How difficult of accomplishment this last point is may be inferred from Dr. R. W. Smith's testimony, that out of twenty cases of fracture of the lower end of the radius, in none had the normal length been restored; in all the anterior surface exceeded the posterior. Dr. Macdonald thinks the several desiderata above mentioned have been met by the apparatus known as Gordon's splint, in which the normal curve of the bone is taken as a guide, and the radius thereby forced to assume its proper form and relations, while the carpal surface is directed downwards, the hand being moderately adducted and midway between pronation and supination. Finally, they are easy of application, and the feeling of comfort experienced from the support thereby afforded

is marked when contrasted with any other form of splint in ordinary use. (*British Medical Journal*, March 1, 1873.)

Nitrate of Potash and Quinine as Febrifuges.—Dr. H. Macnaughten Jones states that for some years past he has frequently employed nitrate of potash and quinine in large doses in diseases where the temperature maintained a high range, and almost universally with success. He records several cases of simple pneumonia, of pneumonia complicated by typhoid symptoms, and of intermittent fever, where this plan was pursued with good results. The nitrate was given in doses of fifteen grains every six, or even three hours, whilst the quinine was ordered in ten-grain doses at corresponding intervals; sometimes a little ipecacuanha was added. (*Ibid.*)

Treatment of Psoriasis.—Dr. Myrtle, of Harrogate, states that from extensive personal observation he is satisfied that frequent and protracted courses of arsenic, mercury, and iodine, whilst they undoubtedly relieve some of the local symptoms, do so in the great majority of cases only temporarily, whilst they permanently exercise in many persons a baneful influence on the general health or condition of certain viscera. The depressing effect of the disease on the spirits, especially in females, is very great, and there is a remarkable tendency to conceal the disease. External applications of the various preparations of coal-tar, creosote, carbolic acid, and mercury or iodine, singly or in combination, are most useful, and cannot with ordinary care be injurious. The internal and external use of mineral waters frequently exert a most beneficial influence where other means have failed, but in old-standing cases no good need be looked for unless these are steadily persevered in for months. According to Dr. Myrtle, Harrogate waters seem to exercise an exceedingly powerful influence in the abolishment of the disease. (*Ibid.*)

Potassium Chlorate in Catarrh.—Dr. Leonard Sedgwick draws attention to the immense value of potassium chlorate in catarrh. If taken early, he says, and taken frequently, it will stop many a cold. The best form is the lozenge, eight or ten or more of which may be taken in the twenty-four hours. These should be sucked very slowly, for its action is chiefly if not altogether local. It always quickly relieves the stuffing of the nose, the rawness of the throat, the thickness of the voice, and, if begun soon enough, speedily cures the cold. (*Ibid.*)

On the Treatment of Chronic Dysentery.—Dr. Ward states that foremost amongst the drugs which have been held in repute in the treatment of dysentery, is ipecacuanha; and

simple testimony has been borne to its value, in the acute form of the disease, by Pringle, Twining, McGregor, Martin, Morehead, Docker, and other Indian practitioners. Large doses of the drug have been given, and appear generally to be well tolerated. How such doses act has not been very clearly explained; probably by a powerful sedative effect upon the circulation. In small doses the effect would be to relax the congested capillaries and promote secretion from the inflamed mucous membrane, and, when combined with opium, to determine to the skin. In the sub-acute dysentery occasionally met with in this country, and contracted here or in the West Indies, ipecacuanha, either simple or in the form of Dover's powder, has proved of service. The good it has done in the acute and sub-acute forms of dysentery has led to the erroneous conclusion that it might be appropriate also in the quite different condition which prevails in advanced chronic dysentery. For the latter affection he has given ipecacuanha at different times in varying doses, and either alone or combined with opium, and had at length discontinued to prescribe it because he could not satisfy himself of its efficacy. Quite recently Mr. Leach has given ipecacuanha in certain cases, and by the side of these other cases have had mere placebo treatment, without any apparent difference in the result. The various astringents, mineral and vegetable, have had an extended trial, and they have been given alone or in conjunction with opium. In many cases they produce no apparent effect; in others a fallacious appearance of benefit was followed after a short time by a fresh outbreak of symptoms, and there could be no doubt that they did more harm than good. That certain local applications might do good in exciting healthy action in the ulcerated intestinal surface is very probable; but how can they be applied? It does not follow that because ipecacuanha and astringents have been found useless in the treatment of chronic dysentery, nothing is to be done. Much may be done by strict attention to general hygienic rules, and by the use of drugs for the relief of special symptoms. The first thing to be insisted upon is rest in bed and in the recumbent position, in which the bowels are best kept quiet. The rest and warmth of the bed alone produce the most marked benefit. Patients who have been previously moving about will at once express themselves as feeling better; and the teasing, small, frequent motions will rapidly be reduced to such frequency only as is necessary for the effective removal of the contents of the intestine. This rest must be maintained, and the physician will have to exhibit firmness in insisting upon it—for a week or two in mild, and for months perhaps in severe cases. Diet stands next in importance. That kind of diet should be ordered which gives least work to the alimentary canal, which is most likely to be assimilated.

lated should the mesenteric glands be implicated, and which will send down to the large bowel a minimum amount of irritating waste material. Milk is the best form of nourishment in these cases; flour boiled with milk is a good combination; farinaceous articles of diet are also admissible. As a rule patients do better without alcoholic stimuli; but where there is much prostration these must be given. It is important, too, that an even temperature should be maintained by night as well as by day in the bed-room. During convalescence flannel next to the skin, and otherwise adequate clothing, are essential. An occasional dose of opium at night may be given where there is much restlessness, and a dose of castor-oil guarded with laudanum is often found serviceable where there has been much griping and distress. For the tenesmus from which some patients suffer much, an injection of starch and opium is the best remedy. (*Medical Times and Gazette*, Feb. 22, 1873.)

Extracts from British and Foreign Journals.

Traumatic Brachial Neuralgia treated by Excision of the Cords forming the Brachial Plexus.—A remarkable case is reported by Dr. Sands and Dr. Seguin in Dr. Brown-Séquard's *Archives of Scientific and Practical Medicine*, a new journal, of which the first part has just appeared. The injury in this case was caused by the unexpected discharge of a cannon which the patient was loading; great damage was done to the left upper extremity, and its sensibility was destroyed; but after a time pain began to be experienced in the hand, which gradually became very intense, and was not ameliorated by any ordinary means. Amputation was therefore performed, which was followed by temporary relief. The pain, however, soon returned, and rapidly regained or even surpassed its previous intensity. It was determined to divide the nerves which form the brachial flexus. An J-shaped incision was made, its long arm running parallel to the outer border of the right sterno-mastoid muscle, and the shorter arm following the clavicle. Careful dissection exhibited the nerves, and they were successively divided, a piece of about a quarter of an inch in length being excised by Dr. Sands. Great improvement, though not complete recovery, followed in all the symptoms. Immediately after the amputation, Dr. Seguin tested the nerves and muscles respectively with electrical currents, and found the former were wholly inexcitable, whilst the latter were extremely irritable. A good drawing accompanies the paper. (*Dr. Brown-Séquard's "Archives of Practical Medicine,"* No. 1, 1873.)

Pathological Changes of the Sympathetic Nervous System in Syphilis.—Dr. Petrow, of St. Petersburg, from his investigations on the pathology of syphilis, has observed that in cases of this disease the sympathetic nervous system is affected, and that both the nerve-cells and fibres and the interstitial connective tissue undergo well-marked changes. The most notable of these are: 1. That the cells become the seat either of the deposit of finely granular brown pigment, or they undergo a kind of colloid degeneration; the former change, however, being

the most common. 2. The interstitial connective tissue becomes hypertrophied, which leads to compression and ultimate atrophy of the nerve-fibres. 3. The endothelium, investing both the nerve-cells and the nerve-fibres, becomes hypertrophied. Dr. Petrow's specimens were taken from the cervical, thoracic, and solar plexuses, and were hardened in various ways with chromic acid, chloride of gold, and perosmic acid. (*Virchow's Archiv*, B. lvii. p. 126.)

Clinical Means of recognising Mercury in the Excretions.—M. Mayençon and Dr. Bergeret, in an interesting paper on this subject, give the following as the conclusions at which they have arrived:—1. That mercury and its salts are absorbed by the skin as well as by the stomach. 2. That of the mercury absorbed, a part, and that the major part, is immediately eliminated, whilst the smaller part impregnates the tissues, from which it is only insensibly eliminated. Even this part, however, is rather quickly eliminated if the use of the medicine has not extended over any great length of time. 3. Elimination seems to be effected by all the excrementitious fluids, but chiefly by the urine and the intestinal juices. 4. Iodine has a marked effect in clearing away mercury from the tissues. 5. Mercury and mercurial preparations discharged by the humours, and especially by the urine, are readily discoverable by the action of a voltaic element—iron and platinum. The mercury forms a metallic coating on the platinum, and should then be converted into the bichloride, and finally into red biniodide, with a solution of iodide of potassium. (*Robin's Journal d'Anatomie*, No. 1, 1873.)

Influence of Carbolic Acid in preventing Pyæmic and Putrid Infections in Animals.—M. Rosenbach, in an *Habilitationschrift*, of which an abstract is given in the *Centralblatt*, after referring to Lister's experiments, states that he has undertaken a series of experiments to determine the effects of injecting pus into dogs and rabbits, in some cases pure, and in others after mixture with carbolic acid. He found that freshly obtained laudable or putrescent pus usually produced, when injected in sufficient quantity, phlegmonous inflammation, general malaise, a high temperature, and death after the lapse of a few days; but when mixed with five per cent. of carbolic acid, which caused it to become partially coagulated, it only led to the formation of abscesses without any general symptoms. The addition of one-quarter per cent. of carbolic acid exercised no influence in modifying the symptoms. One per cent., however, was in some instances successful in circumscribing the action of the pus. Pus which from long exposure to the air had undergone putrefaction and smelt of sulphuretted hydrogen appeared to lose

little or nothing of its action by the addition of five per cent. of carbolic acid. (*Centralblatt*, 1873.)

The Action of Cold Water on the Spleen.—In a paper contributed to Virchow's *Archiv*, Professor Mosler remarks that the action of cold water on the spleen has not been applied to any great extent in practice, except perhaps by Currie, who recommended its use in ague; a recommendation that has been followed by Gianni, Priessnitz, Schedel, and others. Professor Mosler determined to undertake a series of experiments to ascertain the nature of the action of cold water on the spleen, and with this end in view he lifted the spleen from its natural position in the body of a living dog, and placed it on the abdomen, and directed a powerful current of water upon it. On exposure it measured 20·5 centimetres long and 6 broad, but immediately after the current of water at 6° R. had been directed upon it, it became granular and greyish red upon the surface; nevertheless, after ten minutes its length had increased to 23·5 cent. and its breadth to 8·5 cent., which was owing to compression of the splenic vein by the lips of the wound in the abdominal parietes, which was done to prevent the admission of the water into the abdominal cavity. In a second set of experiments the spleen was left *in situ*, and an ice-bag was placed over the splenic region after the hair had been shorn off. The abdominal cavity was then cautiously opened, and the spleen withdrawn and measured. Its length was 17 cent. and its breadth 5 cent. The application of the ice-bag was continued for an hour, and an injection of cold water made into the rectum every quarter of an hour for the same length of time, when the spleen was again removed and measured; its length was now found to be 14 cent. and its breadth 4·6 cent. During the next two hours the application of cold was suspended, though the animal was left bound on the table. On examination, the spleen had a length of 15 cent. and a breadth of 4 cent. Having satisfied himself from these experiments that cold does cause diminution of the size of the spleen, Professor Mosler next tried it in a series of cases of disease, principally of ague and leucæmia. He finds that the febrile paroxysm can be arrested by the cold douche, and that it can thus take the place of quinine, but its action is not so persistent. It diminishes the enlargement of the spleen that takes place in typhus. (*Virchow's Archiv*, 1873, Band lvii. 1.)

Galvano-caustic Surgery.—*La France Médicale* reports two cases treated by the application of the galvano-caustic wire and knife, under the care of M. Amussat. The first was a man, aged thirty-three, who suffered from a tuberculous testis. He had no other scrofulous tumour. In 1861 his left testis became inflamed,

an abscess formed, and after discharge of the pus had taken place, cicatrization was effected by injections containing iodine and the application of iodide of potassium ointment. Five years afterwards, he experienced a similar attack in the right testis. On this occasion the patient entered the Hospital Beaujon, under M. Adolphe Richard, who, recognising the tuberculous affection of the organ, cauterised it frequently with the "caustique de Filhos" and with chloride of zinc paste, without obtaining any satisfactory result, as the patient left the hospital with two fistulous passages, and for the relief of these he applied to M. Amussat. This was in September 1872. Armed with his *pince porte caustique*, charged alternately with the caustique de Filhos and zinc paste, M. Amussat succeeded in healing up both sinuses. Soon after, however, a tumour made its appearance, which M. Gosselin recommended, after consultation, to be removed.

M. Amussat proceeded to execute a series of manœuvres with the galvano-caustic instruments, which, the reporter of the case, M. Lapeyrère states, equalled the most delicate proceedings with the knife. The first step of the operation consisted in passing a platinum thread through the lower part of the scrotum, so as to isolate the two testes, the tissues being at once divided. The second section embraced a portion of about 6 centimetres in the direction of the cord; the third was made at the posterior part of the organ; the fourth was made parallel to the cord as far as to the perineal fold. A few more sections effected the complete detachment of the tumour from the scrotum, and finally, with one stroke, the platinum thread, still held by the forceps and in connection with the pile, was made to divide the cord. As the patient was not placed under the influence of chloroform, the operation was occasionally interrupted for a few moments to allow him to recover himself, which somewhat prolonged its duration, but on the whole it was well borne, and it was obvious that a great advantage had been gained in sparing a debilitated patient all hæmorrhage. Slight traumatic fever followed, which lasted three days, and in the course of three weeks it had almost completely healed. In another case, and with a different instrument, more resembling a bistourie cachée, a breast was removed with equally good results. (*La France Médicale*, Feb. 22, 1873.)

Carbolic Acid in the Treatment of Cutaneous Affections.—Professor Doutrelepon recommends carbolic acid in prurigo, pruritus, and especially in psoriasis. In eczema he finds it only so far of service that it alleviates the intolerable smarting, and hence diminishes the disposition to scratch. In a case of psoriasis of fifteen years' duration, in which the whole

body was affected, the prolonged internal administration of carbolic acid in large doses effected a complete recovery, and the author hoped by continuing the remedy in smaller quantities to prevent relapses. The doses in which he prescribes the remedy are rather high, as much as 40 grains being taken in divided doses in the course of the day. No albumen appeared in the urine, nor was there any inconvenience experienced. Dr. Doutrelepon, however, begins with small doses, ordering about seven grains per diem in the form of pill. (*Vortrag in der Med. Sect. der niederrhein. Gesell. zu Bonn*, July 22, 1872.)

Precautions against Venous Hæmorrhage in Tracheotomy.—Dr. Frederick Betz, of Heilbronn, in his *Memoirabilien*, observes that venous hæmorrhage constitutes one of the most fatal occurrences in tracheotomy. It may occur either before or after the incision into the trachea. If it occur before, it may be arrested by the application of the sesquichloride of iron, by transfixion of the vessel and the application of a ligature, or still better by the rapid introduction of the canula, and the re-establishment of the respiration. In like manner, if the hæmorrhage occur after the incision into the trachea, the insertion of the canula is the best, and indeed the only means of stopping the bleeding. There are cases, however, in which, notwithstanding that the canula has been skilfully inserted, hæmorrhage continues simply because the child makes no inspiration, but remains in a state of spastic expiration. In such condition respiration should be excited by blowing air through the canula. Dr. Betz has performed fifteen tracheotomies in croup, with six recoveries. In one case the child died on the table from asphyxia, but in a similar case which occurred subsequently, recovery took place by practising the above manœuvre. The great distension of the cervical veins during expiration is well known, and the hæmorrhage if a vein be wounded is then very free: on this account Dr. Betz recommends that the incisions should be made as far as possible during inspiration. (*Aerztliches Literaturblatt*, No. 10, 1872.)

Notes and Queries.

DEPARTMENT OF ANALYSIS AND INVENTIONS.

DR. CROMBIE'S CHLOROFORM APPARATUS (manufactured by S. Maw, Son, and Thompson).—This instrument, of which we append a woodcut, is a very ingenious and useful invention. The object of the inventor has been to make it possible for persons suffering from intense pain or insomnia to avail themselves of the benefits of those smaller doses ("stimulant" doses, we should call them) of chloroform which will produce sleep without producing coma. It is notorious that an immense number of sick persons are in the habit of using chloroform with this intention, but that they usually take it by means of a simple handkerchief or lint, which, at any rate for self-administration, is a most dangerous method, and is already known to have caused several deaths, and suspected to have caused many others. In Dr. Crombie's instrument there is no danger of any untoward accident. The patient, lying comfortably on a sofa, or in bed, places the vessel containing the chloroform (the cap well screwed on) beside him, and puts the conical face-piece over his nose and mouth. He then proceeds to work the hand-ball with regular rhythm: this projects an exceedingly small quantity of chloroform, at each jet, on the blotting-paper in the case. Very soon a feeling of drowsiness comes over the patient, which renders it impossible for him to keep up the pumping movement, and he quickly drops off to sleep without the possibility of giving himself an overdose. We understand that this inhaler has been largely used for cancer patients, and other sufferers from painful incurable diseases, with great benefit. It certainly affords the only means we know of by which chloroform can safely be administered to themselves by patients.

HOMŒOPATHIC PILULES (purchased of two leading homœopathic pharmacists).—The administration of so called homœopathic medicines undoubtedly sometimes produces, or rather is followed by, beneficial effects on patients. Leaving out of consideration the notion that this may be due to the infinitesimal quantity of drug professedly administered, as unworthy of serious



consideration, the effect must be ascribed to one of two causes. Firstly, it may be due entirely to the imagination of the patient, for even bread pills, as is well known, sometimes prove effective; or, secondly, it may be due to an ordinary dose of the drug given under the guise of a homœopathic one. With a view, if possible, of throwing some light on this question, we have recently examined some of the more commonly-used homœopathic pilules.¹

The dilution chosen was that known as the second: each pilule, the average weight of which was 0·6 grain, should accordingly contain 0·00006 grain of the drug. This quantity, while already an infinitesimal dose, is yet, in the case of the drugs chosen, fairly within the reach of analysis. The third dilution, almost in every case, places the drug beyond the reach of analysis. This consideration may perhaps, in some measure, account for the difficulty we experienced in procuring the pilules of the second dilution for our analysis.

Sulphate of Copper Pilules.—First sample, no copper could be detected in 100 pilules; second sample, no copper could be detected in 200 pilules. The quantity of sulphate of copper in the above pilules should have been 0·006 and 0·012 grains respectively. If even as little as 0·0001 grain of the sulphate had been present it would have been detected. These samples therefore contained at any rate much less of the drug than they should have done (120 times less in the second sample), and in all probability no copper at all was present.

Corrosive Sublimate Pilules.—It was just possible to detect mercury in 200 of the pilules. The amount was, however, less than corresponds to 0·0005 grains of corrosive sublimate, whereas 0·012 grains of this salt should have been present.

Nux Vomica Pilules. Belladonna Pilules.—No strychnine or atropine respectively could be detected, even when 300 pilules were employed. As the chemical test in the first case, and the physiological test in the second case, are of extreme delicacy, we may safely conclude that in neither case was there more than the professed dose of the drug present; indeed, the probability is very great that no nux vomica nor belladonna was present.²

So far, then, it would appear that we must place any cures following the use of pilules similar to the above to the credit of the imagination. We shall continue the subject on a future occasion.

¹ Pilules are different from globules. They are about as large as No. 5 shot, and, obviously, could well contain a massive dose of any energetic substance.

² In the case of nux vomica, e.g., 300 pilules should have contained about 0·0003 grain of strychnia. Now, so small a quantity as 0·0001 grain of strychnia is well known to give distinct reactions to chemical tests, but no reaction could be obtained in the present case.

THE PRACTITIONER.

MAY, 1873.

Original Communications.

THE GEOMETRICAL METHOD IN MEDICINE.

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PART III.

It was shown in a previous article that the *form* assumed by Hoffmann's system was determined by the Cartesian philosophy; but, during the latter half of the eighteenth century, there were on all sides manifest indications that it was tending to dissolution. The philosophy of Descartes had never exercised a powerful influence upon philosophical thought in England; but the school of Locke corresponded to the realistic aspect of Cartesianism. This branch of the Cartesian philosophy ended, in this country, in the Nihilism of Hume; and in France, in the Materialism of La Mettrie. The idealistic branch produced the German illumination, a movement which was characterised by an extreme subjectivity. Man, with his feelings, sentiments, and interests, was everything; and the external world of value only in proportion as it contributed to the internal satisfaction of the subject. And when the two branches into which the Cartesian philosophy had divided were again united by Kant, what was

the result? In the Second Book of the Transcendental Dialectic,¹ Kant completely subverted the rational psychology founded upon the doctrine of the soul considered as a thinking substance. He showed that substances (noumena) are beyond the limits of our knowledge, and directed attention to the practical field of phenomena. "What may be the nature of objects considered as things in themselves," he says, "and without reference to the receptivity of our sensibility, is quite unknown to us."² The decay and ultimate subversion of the Cartesian philosophy produced, as might have been expected, a corresponding change in medical theory, and more especially in the method adopted in constructing the system. The doctrine of the soul could no longer be placed at the foundation of a system of medicine.

We have already seen that Hoffmann's speculation with regard to the sensitive soul was practically a device whereby he was enabled to substitute the nervous fluid instead of the rational soul as the prime motive force of the body. But Boerhaave, who was Hoffmann's contemporary and the disciple of Pitcairn, did not trouble himself with the soul as a substance. He investigated the phenomena of mind, and rejected all inquiries into *primary*, *physical*, and *metaphysical* causes; meaning by the former *transcendental*, and by the latter, *final* causes.³ A similar view was adopted by Haller. It was enough for him to know that a certain invariable connection did exist between mind and body; but the nature of that connection was beyond his knowledge.⁴ The influence of the philosophy of Locke can be readily detected in the opinions of Boerhaave, and of his pupil Haller; and it is only what might have been expected that our countrymen, Cullen and Brown, who were trained in the English school of psychology, and the former of whom was the friend of Hume, should have maintained similar opinions. The opinions of these great men have, however, only an incidental value for our present purpose. Boerhaave did not employ the geometrical method in the construction of his system. He was an Eclectic. As Sir W. Hamilton says: "In practice he was a genuine follower of Hippocrates and nature; in theory, at once Peripatetic and

¹ Kant's "Critique of Pure Reason." Bohn's Philosophical Library, p. 237, et seq.

² Ibid. p. 36.

³ Institutes, § 28, Comment.

⁴ "Primæ Linæ," Sect. 572.

Cartesian and Leibnitzian. Iatro-chemist and mechanician, Humorist and Solidist, his system presents only a plausible conciliation of all conflicting hypotheses.”¹ Haller was the founder of modern experimental physiology, but he did not construct a system of medicine. Cullen, however, adopted Haller’s doctrine of irritability, and erected upon it a system very similar in *matter*, though different in *form*, to that of Hoffmann; and this system was further modified and perfected by Brown. But Cullen and Brown, instead of using the Cartesian method, like Hoffmann, adopted the method of Locke. Locke proposed to apply the experimental method to the phenomena of the understanding; and although he was, in the main, faithful to this method, yet the first step he took in his investigation was to adduce a theory to account for the origin of our ideas. The example thus set was followed by Cullen and Brown. Both employed the method of observation and experience along with the adoption of fundamental hypotheses with regard to the nature of life and of the action of remedies. These systems are, therefore, beyond the scope of this paper.

But it was not philosophy alone which had undergone a change during the latter half of the seventeenth century. The revolution in physical science was no less complete. The influence of the Newtonian physics was rapidly becoming predominant. Newton substituted two forces in celestial mechanics instead of the one force of Descartes; and when the Newtonian theory took its rank amongst the accepted doctrines of science, it produced a powerful influence upon all the conceptions of physics. Everywhere investigators showed a bias to the adoption of a duality of forces in scientific explanations: attraction and repulsion took the place of the impulsion of Descartes. Magnetism, to which electricity was afterwards assimilated, was conceived as negative and positive; and Haller proved that there was a double force in the body,—*irritability*, or *vis insita*; and *sensibility*, or *vis nervosa*. Polarity and dualism were everywhere predominant in science. This universal homage to the genius of Newton and of truth exerted a great effect upon medical doctrines. If the overthrow of the Cartesian philo-

¹ Sir W. Hamilton’s “Discussions on Philosophy,” &c. Third Edition, p. 257.

² “Halleri Primæ Linæ Physiologiæ,” p. 201 et seq.

sophy rendered it impossible to place the metaphysical doctrine of the soul at the foundation of a system of medicine, the subversion of the Cartesian physics made it equally impossible to construct a system from a definition and a few axioms similar to the physical side of Hoffmann's system. An apparent homage must be paid to the prevailing doctrines in philosophy and science. We may, therefore, expect that any subsequent attempt to construct a complete system on the type of geometry will not be modelled upon the Cartesian physics, but will arise from a misconception of the Newtonian method. The great generalization of gravitation occupied such a prominent position in the theory of Newton, that those who had only a partial acquaintance with the theory supposed that it was founded upon one law. The next geometrical system of medicine is, therefore, more likely to take its rise from this misconception, and to be founded upon either a real or a supposed generalization from experience.

The system of Samuel Hahnemann is the best example of a complete scheme of medicine founded upon one comprehensive generalization. In dealing with this system in a short article, I must presume to some extent upon the knowledge of the reader, and, in order to save space, I shall carry exposition and criticism hand in hand. I may also premise that no notice will be taken of the absurdities into which the founder of homœopathy was betrayed, except when these are consistent and legitimate deductions from his fundamental principle. Common sense and common fairness dictate that in controversy we should grapple with the most reasonable and not with the crudest form of a doctrine. I do not intend to discuss the defects of homœopathy as practised by this or by that individual, whether founder or disciple, but those only which are inherent to the system, and which no amount of elaboration can ever remove.

"The homœopathic method, or that which employs medicines producing symptoms similar to those of the malady," says Hahnemann, "is the only one of which experience proves the certain efficacy."¹ This law is aphoristically expressed as "*similia similibus curantur*." The inductive evidence for the

¹ Hahnemann's "*Organon*," translated by Hering, p. 103.

law—and it is upon the inductive evidence that homœopathists mainly rely—rests upon a simple enumeration of instances without any attempt at elimination. Few people will deny that mercurial preparations will cause diarrhœa with green motions in healthy children; and that in certain cases of infantile diarrhœa these same agents will be found useful in its cure. Cantharides occasionally produces in a healthy person symptoms not unlike gonorrhœa, and cases of this disease have been cured by it. From these, and other positive instances which might be adduced, it may be inferred that *some* diseases *may be* cured by an agent which produces symptoms in the healthy similar to those of the disease. So far, then, no one need object to the generalization. Sprengel says that Hahnemann demonstrated “par une bonne induction que la plupart des médicaments énergiques connus sous le nom de spécifiques, ne sont utiles que parce qu’ils déterminent un excitement artificiel qui produit souvent des phénomènes très-analogues à ceux de la maladie. En effet, sa théorie est parfaitement confirmée par l’observation journalière de contre-excitations excitées par l’art, à l’aide desquelles on parvient à détruire l’irritation morbifique.”¹ This judgment, although expressed in too theoretical language, is in my opinion perfectly just. The generalization is good, if it is not extended beyond certain limits. It is no valid objection to it to say that the progress of investigation will help to explain the few cases which favour the law. This is what we expect the progress of investigation to do for all empirical laws, except those general ones which are founded upon the universal experiences of the race; but, until it is explained, it may be accepted as true upon the inductive evidence: that is, within the limits in which it has been observed to act, with a reasonable extension to adjacent cases.

But the proposition that *some* diseases may be treated by a drug selected by the homœopathic law, will only carry us a very little way in founding a system of medicine. Before it can be made the basis of a system, the particular must be converted into a universal proposition. The proposition required is not that *some*, but that *all* diseases may be so treated. The universal proposition is so manifestly erroneous that even Hahnemann is

¹ “Histoire de la Médecine,” par Kurt Sprengel, tome vi. p. 372.

compelled to place surgical diseases, especially those belonging to manual surgery, beyond the limits of the law.¹ He also admits that ² "those diseases brought on by the introduction of indigestible or hurtful substances into the alimentary canal and other organs," and "those produced by foreign bodies penetrating the skin," &c., may have a material principle for cause; and as these diseases are not dynamic, it may be presumed that at the very least a large part of their treatment cannot be brought within the scope of this law. But in this allusion to the dynamic element in Hahnemann's theory, I am anticipating. I am not sufficiently acquainted with homœopathic writings to be sure that I know all the expedients adopted to meet the difficulty of making a particular proposition the basis of a system. The method adopted by Dr. Sharp, of Rugby, to whose able writings homœopathy in this country owes a great deal, is to give a list of diseases, such as fractures, strictures, calculus, poisoning and antidotes, dropsy, &c., to the treatment of which the homœopathic law is not applicable. This list is given without any principle of selection; and we are, therefore, entitled to ask how it is known that it cannot possibly be extended. If, on the other hand, a principle is discovered, by which those diseases which may be treated according to the homœopathic law, and those which cannot be so treated, can be distinguished from each other, then medicine must be founded upon at least two principles instead of one. The expedient adopted by Dr. Sharp is in short an acknowledgment that medicine must be founded either upon two principles at the very least, or that one section is founded upon one principle and another left to the routine of practice, without it being possible to determine where the operation of the principle ends and empiricism begins.

But before the homœopathic law can be made the basis of a system, not only must a particular be converted into a universal proposition, but a rule for which the evidence merely points to probability or possibility must be made absolute. The evidence merely shows that *some* diseases *may be* treated according to this law; but the proposition required is that *all* diseases *must be, ought to be, or are best* treated in this manner. The last proposition not only asserts but denies; and, indeed, its negative aspect

¹ "Organon," p. 98.

² *Ibid.* p. 37.

is much more extended than its positive. It denies that any other remedy, or combination of remedies, can ever equal in efficacy the one selected according to the homœopathic law ; that any other law or laws, or combinations of considerations, can ever suggest a remedy so surely as the law of similars. For this unwarrantable extension of the proposition there is not a particle of evidence ; nor do I believe that homœopaths themselves are so irrational as to express it in such absolute terms as I have employed here ; but if this law is not absolute, and merely expresses a probability, what avails it as a foundation for a *system* of medicine ? If the proposition only expresses a probability, it dwindles down from the large dimensions of a foundation for a system to an empirical law that can be converted into a practical precept, which may sometimes be useful, at other times useless, and, if trusted very far, will be positively misleading as a guide in practice ; while the progress of discovery in the sciences upon which the art is founded is certain to supersede it by the detection of higher laws, even if it be not, as I maintain, already superseded. The homœopathic law is, however, not only far too narrow as a foundation for a system of medicine, but it presents great difficulty and uncertainty in its application. What constitutes *similarity* between two groups of symptoms ? If the similarity must be complete in all the details, it is scarcely possible to apply the principle at all, since it is very rare for a drug to produce in the healthy symptoms exactly similar to those of any natural disease. If, on the other hand, it is only necessary that a few of the symptoms produced by the drug correspond to a few of the symptoms of the disease, then the most opposite drugs may be selected as equally applicable to the treatment of the case. Belladonna, when administered to the healthy, is said to produce sore throat and a red rash ; and as these are prominent symptoms of a certain stage of scarlet-fever, this drug is selected as the appropriate remedy in that stage. But even if we suppose that the sore throat and red rash caused by belladonna and those of scarlet-fever are really similar to one another, these are only prominent symptoms of the physiological action of the drug on the one hand and of the disease on the other ; and between the remaining symptoms of the one and those of the other there is very little resem-

blance. On the other hand, the most opposite drugs produce symptoms which correspond in one or two particulars to those of scarlet-fever. What, then, becomes of the homœopathic law as a principle of drug selection? The homœopathist may reply that in this and similar instances he selects the drug fully conscious of the imperfection of his law; that if he could find a drug which produced symptoms in all respects similar to those of the disease, he would not employ belladonna; but as this drug "has the power of producing an artificial malady, the nearest in resemblance to the natural disease,"¹ he will give it a cautious trial, checking this trial by the clinical evidence. If the drug acts better in the treatment of the disease, or even in certain cases, or in a particular stage of the disease, he will continue to employ it in accordance with the clinical evidence until something better is found; and if worse, he is ready to abandon it at once. The homœopathist may also reply that the difficulty of applying his law arises not so much from the imperfection of the law itself as from the imperfection of our scientific knowledge of the symptoms produced by drugs upon the healthy and of those of disease. If we possessed no knowledge of the symptoms produced by drugs upon the healthy, the law could never have been discovered, and therefore could not be applied; while, on the other hand, if our knowledge of drug symptoms and disease symptoms were perfect, this would lead to perfection in the application of the law; and therefore an intermediate degree of knowledge between none and perfection must lead to a corresponding degree of certainty or uncertainty in the use of the homœopathic law. But the uncertainties which arise from imperfections of knowledge are not peculiar to homœopathy; they are incident to all systems of doctrine in which truth is made to flow into practice. This argumentation is not invulnerable at all points; but I am bound to acknowledge that it has very great force, and that it meets very fairly the usual objections to homœopathy upon this point. It is not true, however, that even if our knowledge of the symptoms produced by drugs in the healthy and of the symptoms of disease were perfect, it would lead to absolute certainty in the application of the homœopathic law. But as the force of this objection will

¹ "Organon," p. 103.

become more apparent in the sequel, I prefer, in the meantime, to discount the whole of this argumentation in favour of homœopathy, and proceed to notice the development of the system reared upon the law of similars.

In order to apply the law of similars, it is only necessary to take cognizance of the group of symptoms which constitute a disease on the one hand, and the group produced by a drug in a healthy individual on the other. In the study of disease and of the physiological action of medicines, we need only attend to the symptoms and the order in which they arise, noting differences of age, sex, and constitution, so that a good graphic representation may be obtained of the deviation from health. In saying that homœopathy can only take cognizance of the symptoms, no unfair advantage is taken of the mode of expression employed in enunciating the law; since the evidence upon which the law is founded does not warrant the recognition of anything beyond the symptoms. The evidence in favour of the homœopathic law must be inductive or deductive or both combined. Hahnemann adopted both kinds of evidence. He discovered the law through induction; but he endeavoured to give it a deductive explanation. If this explanation were true, the system ought to have been founded, not upon the law of similars, but upon the more fundamental laws from which it might be deduced; and it would be necessary for us, in determining this question, to analyse the character of these fundamental laws. Hahnemann's explanation is, however, repudiated by his followers; and although other explanations have been advanced, homœopaths do not rely much upon them; but defend the law mainly by the inductive evidence. They delight to call their system the system of experience. But the inductive evidence can only give us two groups of symptoms and a comparison between them. If I say that the disease caused by a mercurial salt in a child is similar to a disease in the cure of which it is found very useful, I can only mean that a similarity exists between the groups of symptoms which constitute those diseases. If I endeavour to form a connected theory of the manner in which the mercurial salt acts in producing the disease in the healthy, and in procuring health in the diseased, I go far beyond the bounds of the inductive evidence of the

homœopathic law. Hahnemann ought, therefore, to have rejected all knowledge of both drug and natural diseases except the symptoms; and accordingly he did reject all other knowledge; and only admitted what may be comprised in a good graphic representation of the disease. "The *ensemble* of the symptoms is the principal and sole object that a physician ought to have in view in every case of disease,"¹ and "there can be no other indication whatever than the *ensemble* of the symptoms in each individual case to guide us in the choice of a remedy."² Let us now trace the effect which this partial conception of disease exercised upon the remainder of his pathology, and upon his mode of investigating the action of medicines.

Hahnemann is never tired of insisting that the totality of the symptoms constitutes the disease. This position, if not a deduction from the homœopathic law, underlies it as a necessary foundation, and Hahnemann endeavoured to prove it by independent evidence. This evidence is found in his metaphysics. We have already seen that Hoffmann took his departure from a metaphysical definition of man, and from this he passed through physiology to pathology and therapeutics. Hahnemann, on the other hand, took his departure from an intermediate proposition. Upon this he reared his system, and from it, as a starting-point, he dug down through pathology and physiology to metaphysics. We have also just seen, that when Kant subverted the traditional rational psychology, the function of the soul as a substance had ceased in medicine. The physics of Newton brought *force* to the foreground; and the metaphysical physiologists took refuge in an entity which was supposed to exist corresponding to this conception. Force and matter were not regarded as a mere formal distinction between two aspects of the same reality; but denoted two realities, each self-existent: the former active energy producing the motions of the latter; the latter passive and offering to the former a substance upon which to exercise its power. Hahnemann adopted this conception of force. "During health," he says, "the system is animated by a spiritual, self-moved, vital power, which preserves it in harmonious order."³ Hahnemann therefore believed that the body

¹ "Organon," p. 96.

² Ibid. p. 100.

³ Ibid. p. 97.

was pervaded by a spiritual, invisible, moving principle; and let us see how he reconciled this conception with the view that the totality of symptoms constitutes the disease. We have already seen that Boerhaave had rejected speculations with regard to "primary physical and metaphysical causes," and that Cullen and others had declared that a knowledge of substances was impossible; but Hahnemann misconceived the import of these teachings. He thought that because all inquiry into transcendental causes was impossible, he had only to show that the principle which animated the body was invisible, in order to entitle him to reject all rational interpretation of the phenomena of disease. He is obliged to admit a knowledge of the exciting causes ("*causæ occasionales*"¹) of disease, and, besides the symptoms, he also admits that we must attend to their distributions in space, and the uniformities of their successions in time; in short, to all the circumstances which should be comprehended in a good description of the disease. He had also to admit that we can trace a resemblance between two groups of symptoms. But our knowledge of disease is much more extensive than this. Defective though it be, we do know a great deal, and expect to know more of the causal relations and inter-dependence of these symptoms with one another, and with those of health; and we can not only separate unlike groups of symptoms so as to differentiate disease, but can also unite like groups so as to arrive at good solid generalizations. The metaphysical conceptions of Hahnemann are mentioned here, not because they are necessary to, and absolutely inseparable from, the system; but because they afford a clue to some of the absurd fancies which he affiliated to his system, and which subsequently became more distinctive of the homœopathic scheme of medicine than the law of similars itself. I allude to his theory of the dynamization of medicines by succussion, and the extreme attenuation of the dose employed. His pathological explanation of the law of similars is also inextricably blended with his metaphysical conceptions. But neither Hahnemann's metaphysical speculations, nor the hypotheses which directly result from them, are binding upon his followers; and so far as I can understand, they are already all but rejected amongst the

¹"Organon," p. 95.

advanced leaders of homœopathy. And since they are neither necessary as a foundation to the law of similars, nor legitimate deductions from it, their examination is beyond the scope of this paper. Hahnemann, however, was carrying out consistently the law of similars when he rejected *rational* pathology. Since this principle only takes cognizance of two groups of symptoms and a relation of similarity between them, it is perfectly superfluous to endeavour to give a rational interpretation to these symptoms. He was equally consistent when he recommended that each case of disease should be individualized to the utmost. If pathology consists of an *ensemble* of symptoms properly collated and described, all generalization in pathology must be rejected, except those empirical generalizations which are necessary to classification and indispensable to a good description. It is not denied that a careful register of the symptoms of disease in the order in which they arise, and a careful individualizing and differentiation of disease, are both necessary methods in the study of pathology; but when it is implied that these are the only requisite methods in the study of disease, the proposition has not a particle of evidence; and indeed all the recent advances in pathology, advances which have also been turned to practical account, have been made in direct opposition to it. Registration of symptoms is not more indispensable than interpretation; nor individualization than generalization and abstraction. Before leaving Hahnemann's pathology, it may be expected that I should allude to his theory of chronic disease. He believed that all such diseases took their origin in three chronic miasms: syphilis, sycosis, and psora. This hypothesis has no connection with Hahnemann's metaphysics, and is thoroughly inconsistent with his entire system. It is in the first place an hypothesis to account for a large portion of the diseases to which man is incident after being told that the totality of symptoms constituted the disease; and, in the second place, it is an attempted generalization which is in opposition to his injunctions to individualize disease to the utmost. This hypothesis was derived from the reigning humoral pathology, and the only thing ridiculous about it is that Hahnemann is in this instance inconsistent with his other teaching—is, in his own contemptuous language, a "bastard homœopathist," guilty of a very

considerable "allopathic transgression,"¹ and that the progress of discovery, instead of verifying the hypothesis, has shown it to be erroneous. But his doctrine of chronic disease is rejected by homœopaths themselves, and need not therefore be further examined here; and indeed it is impossible to discuss Hahnemann's pathology at greater length in the present paper. When I consider that nearly the whole of rational pathology, and almost all generalization and abstraction in the study of disease, are rejected, not by Hahnemann alone, but as a necessary consequence of the fundamental principle of the system, I cannot but concur in the judgment (one, by the way, which has given considerable offence)² already passed upon this system by others, "that the predominance of homœopathy would prove 'the Grave of Science.'"

Space will only permit me to make a very few remarks upon Hahnemann's mode of investigating the action of medicines. If a resemblance is to be traced between drug-symptoms and disease-symptoms, it is clearly necessary that the action of drugs upon healthy individuals should first be ascertained. A good deal of information upon this subject may be obtained from reported cases of poisoning, and Hahnemann availed himself of this means.³ But he also undertook systematic observations upon himself and friends, in order to test the action of drugs upon healthy individuals. Although several other medical writers, especially Haller, had recommended and partially executed a similar procedure, I believe that that claim which Hahnemann makes of being the first to carry out this study with a view of turning the knowledge thus acquired to practical account in the cure of disease, will be sustained by the impartial judgment of history.⁴ But, however much praise we may be inclined to bestow upon his efforts in this direction, it should not blind us to the great defects of his method. Hahnemann's method consisted mainly of a registry of symptoms, and a close individualization of each case. All rational interpretation of the symptoms, and almost all generalization, were rejected. Such being the case, he was perfectly consistent in denying

¹ See "Organon," p. 18, footnote.

² See Dudgeon's "Lectures on Homœopathy," p. 306.

³ "Organon," p. 153.

⁴ Ibid. p. 152.

that experiments upon the lower animals were of any value. No one whose opinion is worth having maintains that Hahnemann's method is not one mode of ascertaining the "curative virtues of drugs;" what is maintained is, that it is only one means, and by no means the best; and that the gradual extension of science will curtail instead of extending its application. When the comparative method of investigating the action of drugs is applied to the whole biological series, great generalizations will be obtained, which will reduce the method of proving drugs upon healthy men to a very subordinate position.

In carrying out his method Hahnemann must conform to the known rules of experimental science. He was, therefore, perfectly right in trying drugs "separately and singly, in moderate doses, upon *healthy* individuals."¹ When, however, he carries this rule from the investigation of the action of medicines to the treatment of diseases, from the science into the art, the question assumes a very different aspect. All the products and ends of art are obtained, not by a single agent, but by a combination of means; and I cannot admit it as a binding rule that only one medicine is to be administered at a time in the treatment of a case of disease; and, indeed, the method of the "alternation of doses" adopted by homœopathists is a mere expedient practically to evade the rigidity of this law.

There is another proposition which, although not absolutely necessary to the law of similars, yet underlies it, and to which Hahnemann and his followers, to their credit, have given a clear and emphatic recognition. This is that each medicine has a certain action upon a particular tract of tissue. The homœopathists, however, have not a monopoly of this proposition. It was acknowledged by Hoffmann, distinctly enunciated by Haller, never entirely lost sight of by Cullen and Brown, was revived by Broussais, and underlies at the present day almost every attempt at a rational interpretation of the action of remedies. In my opinion, however, the steady recognition of this proposition by homœopathists more than any other circumstance maintains the vitality of their system in the present day.

With regard to the dose, it is a necessary deduction from the law of similars, taken along with very obvious considerations

¹ "Organon," p. 151.

with regard to disease, that the one administered in the cure of disease should be smaller than that given to the healthy. This is the only rule, and it must be admitted that it is sufficiently latitudinarian, that necessarily follows from the fundamental law of the system; and when homœopathists employ very minute doses they must either appeal to experience or to *à priori* reasoning. With those who are satisfied with the *à priori* speculations of Hahnemann upon this subject I have no controversy, since it is impossible to find common ground upon which to argue; but the leaders of homœopathy, I believe, appeal solely to experience upon this point. I cannot, however, help thinking that even those who appeal to experience are very considerably influenced, however unconsciously, by the metaphysical, or rather by the results of the metaphysical, speculations of their master; but as I have never myself employed these small doses, I should like to speak with diffidence upon the subject. My opinion is that, if homœopathists and ourselves were to come to some practical agreement with regard to the rest of their system, the question of the doses would in a few years disappear from the region of controversy, at any rate from the region of rancorous controversy.

To sum up, homœopathy presents all the characteristic defects of systems, both of science and art, constructed by the geometrical method. It is founded upon a principle which is not ultimate, but derivative; and this principle has to be unwarrantably extended before it can be made the basis of a system. It has also been found that, when homœopathy is consistently constructed, a large part of scientific knowledge must necessarily be rejected as inapplicable to the cure of disease, and therefore unworthy of being cultivated by practical physicians. We have also noticed a few practical expedients adopted in order to bring some of this outlying region within the scope of the system. But the expedients resorted to by homœopathists are less in number, and probably less important, than those employed in other geometrical systems of medicine. Does this prove the superiority of homœopathy? By no means. The system of Hoffmann, for instance, endeavoured to embrace the whole treatment of disease; but homœopathy only pretends to embrace drug treatment, and its law is acknowledged by its supporters to

be merely a law of drug selection. This places a large part of the treatment of disease beyond the scope of the law, and permits the practitioner to have recourse to the principles and facts of scientific medicine in the general management of his patient. But this circumstance enables the homœopathist to be a very much better practitioner than the extreme narrowness of the foundation of his system would lead us to expect; while, at the same time, by neglecting to analyse the workings of his mind when dealing with the general treatment, and by dwelling almost constantly upon the law of similars, he is led to believe that it is the special drug treatment which the latter dictates that alone enables him to cope successfully with disease.

ON THE USE OF ERGOT OF RYE IN THE HÆMOPTYSIS OF PHTHISIS.

BY DR. ANSTIE.

PART III.

BEFORE proceeding to the analysis of the therapeutic results apparently obtained in the series of cases which have been already detailed, I must complete the history of two cases, the later stages of which were accidentally omitted in the second instalment of this memoir.

The old woman whose earlier symptoms were related (as the seventh case in the first series, February *Practitioner*) came again under my care about two months after the arrest of the original hæmorrhage. Although the bleeding had not yet returned, she had been getting steadily weaker, was much harassed by cough, and had copious muco-purulent expectoration. She complained of total loss of appetite, and was emaciated and haggard. Percussion sounds were very unequal, patches of dulness being scattered over both lungs; the largest portion of decided consolidation was in the upper third of the left lung. Over the chest, generally, the presence of bronchitic moist sounds was sufficient to prevent any accurate auscultation; but in the upper part of the left lung it was possible to obtain pretty decided evidence of a cavern with softening walls. There could be no question, here, of a dilated bronchus surrounded by fibroid consolidation, since the whole of the peculiar physical signs at this part of the chest had developed themselves in less than two months; and the change in the patient's whole aspect showed that she was suffering under a fresh and much more serious disease than that which had troubled her chronically for many

years. She was ordered cod-liver oil and tinct. ferri muriat., with chloral to procure sleep, as she suffered greatly from bad nights. The immediate effects were good; but unfortunately the weather became very trying, and a fresh aggravation of all the symptoms was observed. She now (eleven weeks after the cessation of the primary hæmorrhage) was again taken with hæmoptysis, but in a very different manner from that in which it formerly occurred. She coughed up large quantities of blood on four or five occasions, and was then admitted to the hospital in a state of great prostration. Gallic acid (as on the former occasion) was given freely, but without the least effect; after two days of this treatment she was steadily getting worse, with copious expectoration loaded with blood (prune-juice sputa). Digitalis was now administered, at first tentatively, and then in considerable doses (two drachms of the infusion *ter die*); but although it acted favourably in some respects—increasing the urine, which had been scanty and rather albuminous, and somewhat relieving the dyspnœa—it did not in the least diminish the hæmorrhage. Ergot was then given, in thirty-minim doses of the liquid extract, every four hours; and to all appearance its effect was rapid and decided, for the hæmorrhage had almost disappeared twenty-six hours later. The old woman lingered on, without any considerable return of the bleeding, but steadily declining, with signs of rapid lung-destruction, for nearly a month longer, when she left the hospital, wishing to die at home.

The last case which requires notice is No. 5 of the first series (February *Practitioner*)—a young woman who had first developed symptoms of phthisis after typhoid fever. Her second period of attendance at the hospital was about two years and three months from the commencement of pulmonary symptoms; she had been slowly wasting and declining in strength. She applied on account of a return of hæmorrhage, which had occurred suddenly, in a large gush, after a violent fit of coughing, the day before her visit. She now coughed very frequently: the thin muco-purulent sputa were constantly bloody. As ergot had been so useful on previous occasions, it was now given (in forty-minim doses), and again it appeared to produce a speedy effect. Not only did the bleeding quickly cease, but the patient

spoke of herself as feeling much stronger and better, and really looked so; although there were now abundant signs of softening in the right lung, and consolidation (with subcrepitant râles at the apex, posteriorly) of the left lung. The seeming general amendment was delusive; appetite and strength rapidly failed, and the end was evidently near when I lost sight of her, nearly two years and a half from the probable commencement of the pulmonary disease.

In striving to analyse the series of cases which I have recorded, so as to form a judicial opinion on the value of ergot as a hæmostatic in phthisical hæmoptysis, there are sundry necessary precautions which are obvious. It can scarcely be necessary to indicate the dangers of a *post hoc ergo propter hoc* conclusion, since hæmorrhage of every kind is notoriously apt to terminate spontaneously, in an apparently capricious manner. If my recorded cases be looked at carefully, however, it will be seen that none of them are of the more trivial kind; in fact, they were selected for the very reason of their being marked and severe. These fourteen examples of severe hæmoptysis were drawn from a very large field. My out-patient practice at Westminster Hospital has averaged more than eighty new cases per week (not unfrequently there are from fifty to sixty new cases on the heavier of my two days), so that in three years not less than 12,480 patients pass under treatment: of course the number must be greatly reduced (possibly as much as one-third, or even one-half) by instances in which the same person would come twice or even three times under treatment during the three years, but still it is impossible to suppose that less than 6,000 separate individuals were seen by me during that time. Of these, the larger number were trivial cases—catarrh, dyspepsia, &c., but there is also a large residuum of serious cases, chiefly nervous diseases and phthisis. Of the latter, in so poor a population as that which surrounds the Westminster Hospital, there is a considerable quantity; and the severer cases (or rather the more alarming, especially those with hæmoptysis) naturally gravitate towards the hospital. Thus the fourteen cases in which hæmoptysis was deemed sufficiently severe and intractable to afford a worthy test of the efficiency of ergot as a hæmostatic, were selected from a much larger number in which there was more

or less blood-spitting. [I should correct myself by saying that only eleven of them were taken from the hospital practice, the other three having been private patients.] Moreover, among the fourteen cases (or rather sixteen, including the two which were treated for hæmorrhage both of the early and the later stages), there are not less than six instances in which the use of ergot was rapidly followed by cessation of bleeding after other (usually reputed powerful) styptics had failed to arrest the hæmorrhage; besides several others in which ergot was tried alone and with success. Taking these results along with the fact that the ergot distinctly failed in only three cases, I think we may fairly conclude, in the first place, that there was real therapeutic action, and not mere coincidence, in the successful cases.

Granting that there was a positive hæmostatic action of the ergot, is the amount of success great? Here we are encountered by the main stumbling-block in therapeutic inquiries—the impossibility of applying experiments to sufficient numbers of fairly comparable cases. There is probably no subject in practical medicine on which more divergent opinions are held than the question how far the so-called styptics, internally administered, produce a real effect in checking hæmorrhage. Some persons are perfectly confident of success when they administer such drugs as gallic acid or acetate of lead; and I have heard a physician to a well-known London hospital describe to his class, with surprising minuteness, the machinery by which the latter drug does, and always “*must*,” arrest intestinal hæmorrhage in enteric fever. There are others, however, who think very differently. I well remember the shock which it gave me, some years ago, to learn—I forget whether from his writings, or in private conversation with him—that the late Dr. Brinton was profoundly sceptical as to any real styptic power of such drugs as gallic acid and acetate of lead, when given internally. And not long since, an esteemed colleague of my own informed me that on the whole he had ceased to place faith in such remedies for hæmoptysis, and was in the habit of relying mostly upon *digitalis*, which he believed operated mainly by regulating the circulation.

I very early passed from the stage of implicit belief in styptics

to a total distrust of them (as internally administered) ; but for some years past I have seen reason to think that their power is real, though far more limited than many persons have supposed it to be. That the action of the more commonly employed internal hæmostatics is to the last degree uncertain (even though in a moderate number of cases they may apparently act with great promptitude and effect), I think no one of large experience will deny, unless he has entered upon the inquiry with the determination to see none but successful results. With regard to some remedies which (known to be *locally* more or less styptic) are continually given internally for hæmorrhage, by the merest routine, he will quickly make up his mind. He will conclude that, for certain, the mineral acids, in any practicable internal doses, are not directly hæmostatic at all, and are not in the least reliable when the momentary object is to stop the bleeding. And probably he will in the end conclude that, putting aside the case of digitalis, which is peculiar, there remain, among the ordinarily reputed remedies for hæmoptysis, only (1) gallic acid, (2) acetate of lead, (3) either of these combined with opium, (4) alum, (5) turpentine, and (6) sesquichloride of iron, which yield anything like decisive results, while each of them in turn is very apt to fail. Certainly he would conclude, without the least hesitation, that we are ignorant of any but the vaguest clues to the discriminative use of internal styptics ; yet there must be serious differences in the applicability of different remedies to different forms of hæmorrhage. To take a very striking example, what do we know of the reason for the difference between the magical styptic action of turpentine in hæmophilia,¹ and even in purely symptomatic purpura, and its capricious (though occasionally good) results in ordinary phthisical hæmoptysis ?

On the other hand, there is, in the case of ergot, good *à priori* ground for supposing that it would prove to be a more universally applicable remedy in hæmoptysis than any other that

¹ I am obliged to my friend Mr. Hannay, late house-surgeon to Westminster Hospital, for recently calling my attention to this subject of the styptic action of turpentine in purpura. I had certainly forgotten, if I ever knew, the remarkable character of the effect.

has been named. Proofs of its general physiological action have accumulated on all sides of late years, and we know with certainty that, besides its familiar action on the uterine walls, it contracts the smaller arteries, and slows the heart. In these respects it would seem likely to check pulmonary hæmorrhage in the same way as digitalis does, though probably with more vigour, in both these directions, than would be shown by any safe and practicable doses of digitalis. This leads me to those special remarks on digitalis as a pulmonary hæmostatic which I had reserved till now. I think that any person who has patiently tried digitalis, both in ordinary hæmoptysis and also in pneumonia according to the German system, will readily acknowledge its very decided power of diminishing the blood in the sputa in both diseases: and I believe that a careful observer would convince himself that this occurs in direct proportion to the degree in which the heart's action is slowed, *provided it continues regular*. But whatever may be the ultimate conclusion as to the working of digitalis in pneumonia, it certainly is an inconvenient agent to rely upon in the suppression of hæmoptysis, for though very powerful *ad hoc* it produces in an inconveniently large number of cases a temporary fluctuation in the force and regularity of the heart's pulsations. This is very disquieting and sometimes alarming to the patient, and is likely to more than neutralise any direct benefits from the drug. Now with regard to ergot, I can affirm with great confidence that there is nothing to be apprehended. I commenced the use of this drug, for a variety of purposes, several years ago, and have probably given it as largely and continuously as anyone has done. Ever since 1868 (on the suggestion of Mr. Woakes) I have been in the habit of giving ergot in neuralgia and other nervous complaints, and in order to test the range of its powers have often administered it in large doses for many weeks together. Even the continuance of forty-minim doses thrice daily for six weeks or two months has never produced any untoward symptom beyond a general nervous depression, not greater than that which often follows a long course of large doses of bromide of potassium. I need not say that any employment of ergot for hæmoptysis would involve only much briefer periods than this:

for unless it pretty quickly produced a decided impression we should have no reason to expect good from its continuance: and after hæmorrhage has ceased it is probably only necessary to continue the ergot, in diminishing doses, for a few days longer.

I think we have now established the facts (*a*) of the direct action of ergot in the cases which I have recorded; (*b*) of its superiority in several of these cases to other styptics that had been tried; (*c*) the probability, from physiological analogies, that ergot would act more universally as a checker of hæmoptysis than the routine remedies with which we are familiar; (*d*) also that it is perfectly safe for the purpose in view, and in this respect is superior to digitalis, which otherwise resembles it a good deal. Some further illustrations of its special activity should however be given: and I quote, in the first place, from my own cases. Case II. in series *C* (advanced phthisis with rapid tissue destruction) was one of the most ugly and threatening cases of hæmoptysis that I ever saw; in addition to the formidable symptoms already mentioned, there was a history of an epistaxis, some twelve years before, which proved alarmingly uncontrollable, and very nearly killed the patient: the fact that such an immediate impression was produced by the ergot in this case has a great significance. Case I. of series *B* is also very convincing: the alcoholic type of phthisis, when it follows the course described, is a disease in which hæmorrhage, if it occurs at all, is often very violent and intractable, and here it was plain that the direct action of the ergot upon the heart and upon the small arteries was both prompt and efficacious.

One of the best proofs of the reality of a supposed action of any drug is afforded when the effects, which were comparatively slight or dubious after the administration of the rougher preparations, became more marked and apparent in proportion as fewer and more concentrated preparations come to be employed in practice. Now this is precisely the history of ergot as a remedy for hæmorrhage. Used at first in the form of infusion or tincture, it was only moderately efficacious; and indeed, so late as 1870, Nothnagel¹ expressly states that which

¹ *Arzneimittellehre*. Berlin: Hirschwald.

I have been endeavouring to show can no longer be considered true, viz. that ergot is not superior to acetate of lead, or sesquichloride of iron, in hæmoptysis. But the liquid extract, given by the stomach, has given even better and more certain results, not only in my hands but in those of several others. And the hypodermic injection of Bonjean's ergotin (which I have used for other purposes, but not for hæmoptysis) has given still more excellent promise, more especially in the hands of Drasche, of Jamieson, and of Dr. Currie Ritchie of Manchester: the latter gentleman published an excellent paper on the subject in the *Practitioner* for December 1871.

Meantime there have sprung up other collateral illustrations of the effectiveness of ergot in producing contraction of the arterioles and moderating the heart's action: of which the most remarkable is Langenbeck's discovery of the therapeutic use of ergotine injections in aneurism. It is true that this latter subject is as yet not at all completely developed; but enough has been proved to strengthen materially the general mass of evidence in favour of the belief that ergot acts precisely in the manner in which we should desire a pulmonary hæmostatic to act. I of course do not say that we shall not possibly discover a yet more useful remedy for hæmoptysis, but at present we probably possess none equal to it. Over and above the important resource which ergot seems to afford when hæmorrhage is actually dangerous in amount, and when such remedies as gallic acid, acetate of lead, or muriate of iron have failed, I think that ergot is likely to be the most appropriate of all hæmostatics for the hæmorrhage of early phthisis, where it may be hoped that the lung has as yet undergone very little structural change. The prompt suppression of all oozing into the air-cells which, in view of the danger of phthisis *ab hæmoptoe*, it is so important to effect, can probably be in no way so effectually accomplished as by the employment of ergot.

Nor do I prefer the gastric administration, although in the cases recorded I employed it. For getting the best results I can scarcely doubt that the hypodermic injection of ergotine is a decidedly superior method. But I was personally anxious to see whether the remedy would prove practically effective when

given in a form which is much less troublesome, and consequently more adapted to every-day practice, than the hypodermic injection would be. I hope I have shown that it is effective in a very encouraging degree, and that the profession will soon come to recognise the preferability of a direct recourse to its use in hæmoptysis, instead of the routine employment of a series of astringent remedies which are considerably less uniform in their action.

CASE OF STRANGULATED FEMORAL HERNIA WITH GANGRENOUS GUT AND IMPRISONED LUMBRICAL WORM.

BY SAMUEL CRADDOCK,

Surgeon to Shepton Mallet Hospital, &c. &c.

ELIZABETH DISFORD, admitted into Shepton Mallet Hospital, December 26th, 1871, with strangulated femoral hernia on the right side. Patient stated that she had suddenly been seized with severe pain in the right groin, five days previous to her admission.

Operation.—Patient being placed under influence of chloroform, a long incision was made over neck and body of tumour. On dividing superficial fascia, a lot of nasty stinking fæcal fluid escaped, and a long lumbrical worm jumped up (very much like a “Jack-in-the-box”). On reaching the sac, which was adherent to the gut, the latter was found to be entirely gangrenous, and there was a small hole in it at its lower end, through which the lumbrical worm and fæcal fluid had evidently escaped. The sac was well slit up, and the stricture freely divided. Patient was then returned to bed. On the following morning she vomited up six large lumbrical worms; immense discharge escaped through the wound in the groin, which continued for a month after the operation, when she first began to pass a little fæces by the rectum; this continued to increase, and the discharge by the wound to diminish, and on February 21st, 1872, she was discharged from the hospital, at the time passing nearly all her fæces by the rectum. She is now perfectly well, the wound in the groin having entirely healed.

Remark.—The tumour previous to the operation gave clear evidence that the gut was in a state of sphacelus: it was very

much inflamed, and gave a crackling feeling to the fingers on pressure. It was a singular coincidence that a lumbrical worm should be imprisoned in an incarcerated gut. It took twelve months to establish a passage for the fæces *per via naturales*, or, in other words, it took *twelve months for the intestine to thoroughly ulcerate and allow the fæces to pass.*

NOTE ON DR. DALE'S CASE.

BY THE EDITOR.

IN the March number of the *Practitioner* will be found a very interesting narrative of his own case by Dr. Dale, of Plymouth. He has for many years been a sufferer from migraine, and thinks that his personal experience, joined with what he has seen in practice, contradicts the idea that this malady is, in its essence, a neuralgia or neurosis.

I must commence my comments on Dr. Dale's paper by acknowledging that his story is well and clearly told: that it is also scrupulously faithful is evident, because it affords several points which appear to tell in favour of the neurotic origin of migraine.

The first point to which I desire to draw attention is the circumstances under which Dr. Dale's migraine began. It first showed itself at the age of 12, or earlier; and the sufferer (like so many other migraine patients) cannot remember what was the frequency of the attacks in the earlier part of his life, but he is sure that for twenty years (apparently between the ages of 20 and 40) he had them once a month at least. Moreover, they preserved the true migraine type through those twenty years, instead of passing, as is much more commonly the case, into the form of common triguinal neuralgia without stomach complications. I will presently state the probable *extrinsic* reasons for this obstinacy of the disease: for the moment I am only concerned to point out that this is a *severe* case of migraine, taking its rise at a rather unusually early age, and manifesting a tenacious hold upon the system. I am prepared to maintain that such a clinical history of migraine invariably points to an

intrinsic cause in the natural conformation and tendencies of the nervous system. It is far more difficult to demonstrate the share which the nervous system has taken in the predisposition to migraine, in those cases which begin later in life. But when the disease commences at the age at which it attacked Dr. Dale, I do not think the pathogenesis admits of the shadow of a doubt. There may, indeed, be some hesitation as to whether the affliction commences in the vaso-motor centres or in the nuclei or the sensory roots of the painful nerves; but that the essence of the malady must be nervous I think the following considerations will prove:—

1. It has been shown, by my own observations, that migraines in general, but especially those early-commencing and long-lasting migraines, are, in the majority of cases, seen in members of families that are considerably disposed to neurotic diseases. Among other things it is especially common to find a tendency to neuralgia in other forms, or to epilepsy either in the present or past generations of the family.

2. It is admitted by various authorities that migraine frequently interchanges with other neurotic disorders.

3. The nervous system at, and for some time before and after, the development of puberty, is confessedly in a condition favourable to what may be called explosive nervous disorders: the large number of first occurrences of epilepsy at this date is a striking example, more especially as the frequent direct or indirect historical connection between migraine and epilepsy suggests an approximation between their respective places of origin.

4. The *rhythmical* character of the recurrences of migraine, which is an almost invariable feature of its early stages, is highly suggestive of a nervous origin.

5. What probability is there—even the faintest—from either experience or analogy, that the stomach of a young person of from 12 to 17, independent of the influence of the nervous system, would become affected with any obstinate and persistent disease? In *little* children there is indeed a considerable tendency to obstinate gastro-intestinal (chiefly intestinal) catarrh; but this tendency almost wholly vanishes in the third quinquennium of life. Moreover, nearly all the possible causes of

direct irritation of the stomach are absent. In the immense majority of young persons of this age there is a fair appetite for food, and the food supplied by parents and guardians is simple enough. The period of drinking and of smoking to excess has not arrived. And assuredly it is not true that the gluttons, among either boys or girls, are especially subject to migraine. They may get an occasional combined headache and stomach-ache for their sins, but no child ever gorged himself into the true migrainous predisposition. I say this with a lively recollection of my own experience and the feeding habits of school-fellows and other young acquaintances in former days.

It is hardly reasonable, surely, to speak of a disease as beginning probably in the stomach, unless one can frame to oneself some elementary idea of it as coming within one or other of the known categories of possible stomach disorders. We have seen that it is exceedingly improbable that any ordinary irritative affection of the mucous membrane can form the starting-point in question; we may now add that it is impossible that ulcerative disease can be in question, for the latter *never* occurs till from three to four or five years later than the most frequent time of commencement for migraine. Again, the chronic indurative sub-mucous diseases belong altogether (save in most exceptional instances) to a period of life far later than that of the usual explosion of migraine. As for any connection between migraine and the more formidable organic diseases of the stomach, the idea is of course quite out of the question. I am also at a loss to know what kind of rhythmically recurrent disease Dr. Dale can figure to himself as affecting primarily the stomach, which yet *passes away, or becomes utterly latent*, after an attack lasting only a few hours. Is it a disease of secretion, perchance? Here we do indeed appear to gain some inkling of Dr. Dale's theory, but it is certain that he has not cleared his own mind about it. He would appear to suppose that, in certain persons, the swallowing of certain foods and drinks provokes a vitiated gastric secretion, which again, in a secondary manner, produces reflex irritation, issuing in headache of the migrainous type. But it is evident that he has some further indistinct idea *in petto*; some idea of a poison received into the blood, and only after violent efforts again eliminated by the stomach. The moment in which this

victory is achieved is said to be marked by the expulsion of a "gluey *poisonous* fluid," and we can scarcely be wrong in supposing that Dr. Dale would invest this substance with the mysterious functions of a *materies morbi*. I cannot but suspect some influence of a lively enthusiasm here, for I observe that elsewhere Dr. Dale speaks of the peccant material as "frothy mucus," and it is certainly extremely difficult to imagine the kind of "poison" which can be lying *perdu* during the attack of migraine, and finally get expelled in this little bit of mucus, whether frothy or gluey. But the broad answer to the notion that there can be any specific *materies morbi* in such mucus as was habitually expelled at the close of the vomiting stage in Dr. Dale's case is this—that for one instance in which the order of events is thus, it is otherwise in fully half-a-dozen cases. The literature of the disease shows this very clearly; and I have made a point of questioning my own patients minutely as to the character of the vomiting, with the following general results:—(a) That there is every variety in the degree to which vomiting occurs; (b) that there may be no vomiting at all, but only nausea and retching; (c) that where the vomiting is severe it is commonly effortless, however much it exhausts the patient: at least this is the case in *young* subjects; (d) that the vomiting may expel merely food, or the food first and then some watery mucus, and (if often repeated) perhaps some bile; but (e) there is no general law whatever that mucus, whether thick or thin, is the last thing expelled, and in fact the character of the vomit seems partly dependent on accidental circumstances at the time, and largely upon personal peculiarities of individual patients.

In short, the whole character and circumstances of the vomiting appear to point to the conclusion that it does not arise from any primary tissue or gland irritation in the stomach itself, but upon a nervous irritation conveyed from a distance and *gradually setting up* an atactic or disorderly condition of the muscular, and to a certain extent of the secretory, functions of that organ. And certainly it appears incredible that the order of events should be just the reverse of this, as Dr. Dale's theory would assume; for how can we suppose that, if such were the case, the first (and often for hours the only) symptom would constantly be, *not* any local sign of irritation, but pain in a

distant nerve (the fifth) which happens to be connected, in the medulla oblongata, with the root of the vagus. Such a thing might, indeed, happen in exceptional instances: but to suppose that it could be the rule—admitting of very few exceptions—is to my mind quite unreasonable. Surely, if the primary cause of migraine were an irritation acting immediately on the stomach, the earliest symptoms, in an immense majority of cases, would be gastric; but it is notorious, on the contrary, that in ninety-nine cases out of a hundred the vomiting, and even the nausea, are preceded for a long time by pain in one or both fifth nerves (ophthalmic division), and by a highly peculiar set of visual phenomena, which for the most part are *constant in the same individual*. Thus many persons invariably experience the “Venetian blind” phenomenon by which Dr. Dale is troubled; others as regularly suffer from the disagreeable appearance of jagged lightning; and a few persons have been known invariably to experience hallucinations of actual figures of men or animals, &c., in the early stages of the attack.

I may here appropriately refer to a point in Dr. Dale's case which he mentions with much candour, and which, it is not surprising to find, a little disturbs his confidence in the gastric theory of migraine. He tells us that on the eve of the day on which he is about to experience an attack, he often has a feeling of being “exceedingly well”—of having an “exuberance of spirits.” It can hardly be needful to remind my readers that this antecedent feeling of unusual *bien-être* is a very characteristic phenomenon in several of the graver neuroses. It is exceedingly common in epilepsy, and in several varieties of recurrent insanity: it is also not infrequent as a warning of the return of “epileptiform” facial neuralgia which had become temporarily dormant. In short, it is a phenomenon essentially bound up with the rhythmical neuroses. And, on the other hand, it is absolutely irreconcilable with the idea of primary stomach disturbance: for all competent writers on the dyspepsias of local origin are unanimous in affirming that the frame of mind which ushers in these maladies is one of dull depression; the dejected expression of countenance not unfrequently first leads to inquiries that elicit the fact of slight but continuous digestive trouble.

It is full time, however, to notice the argument which forms the main strength of Dr. Dale's position. He lays great and natural stress upon the fact that, in his own case, indulgence in sundry articles of food, especially hot and fat meat, or alcohol in any but the smallest quantities, is extremely apt to provoke, or at least to be followed by, an attack. I have no wish to undervalue this statement; but in order to know what pathological inference may fairly be drawn from it, it would be indispensable that we should have full information on some further points. Firstly, then, I do not gather that Dr. Dale's attacks are *always* preceded by some dietary indiscretion; the regularity with which for twenty years he suffered migraine "at least once a month" forbids the supposition, since he expressly tells us that his habits of life are particularly temperate and regular. Secondly, he acknowledges that anxiety, overwork, or worry, make the (dietetic) exciting causes more certain in their operation; and we have no means of judging to what extent these important influences have intervened in his case. The life of a medical man between the ages of 20 and 40 is, in the majority of cases, a continuous and most anxious struggle with all kinds of difficulties and responsibilities; and the influence of these upon his nervous health is by no means always limited to those effects of which he is distinctly conscious.

I shall by no means deny, however, that many patients who are liable to migraine are very apt to suffer an attack as an immediate consequence of taking certain articles of food or drink. We meet with a considerable number of *adult and middle-aged* migrainous persons who have a most genuine dyspepsia for certain foods. I contend, however, that this particular dyspepsia is no true part of the essential disease, but is an artificial symptom, the result of a misguided dietetic and medical regimen. In young persons—I speak from a vivid recollection of my own case, as well as from what I have seen in 14½ years of practice—there is no nearer connection between food and migraine than this, that a gross dietetic imprudence will sometimes slightly precipitate the occurrence of an attack which, according to customary rhythm, would have been due a day or

two later; while, on the other hand, it is quite common to see migrainous children, in the intervals of the attack, exhibit digestive feats worthy of an ostrich, without suffering the slightest headache. The unnatural sensitiveness which does too often arise, later on, is the work of officious friends and misguided doctors. That strange kind of demon-worship—the *cultus* of the liver—is at the bottom of it all. The liver was almost universally, when Dr. Dale was young, (it is still too widely !) the *fetish* of the merely “practical” doctor: he believed it to be the source of woes innumerable, and there was scarcely anything he would not do to avert its wrath. He would coax it with taraxacum, or wheedle it with nitro-muriatic acid, or take it by violence with calomel and black-draught: but above all, he was always ready to pass children through the fire to it, as one might pass them through the fire to Moloch. The fire was that of starvation: for so great was the dread of “biliousness” that every article of food which could by the most nervous fancy be deemed “rich” got rigorously excluded from the diet of the poor little wretches if once they ventured to have a headache from over-fatigue. Fancy the consequences of all this to children of originally delicate nervous systems—especially the consequences of the systematic exclusion of fat from the diet and the frequent administration of “alterative” grey-powders! There is no need to seek any further for the origin of the stomach’s ultimate incapacity to take that proper variety of foods to which it should have been, but never was, habituated. Nor do I for a moment dispute that a real embarrassment on the part of the stomach would be likely, if not certain, to bring on migraine when the predisposition had existed from birth in the nucleus of the trigeminus, and had been fostered by starvation and “alterative” medication.

So far, then, is the evidence afforded by cases like that of Dr. Dale from converting me to the opinion that migraine is a malady of gastric origin, that I consider them to be distinctly illustrative of the theory of its origin in the medulla oblongata. In conclusion, I beg to congratulate Dr. Dale on the fact that his malady has been relaxing its hold during the last few years.

at is precisely what might be expected in the case of a *nervous*

affection which commenced during the period of bodily development: it would have been an extremely unlikely event in the case of a true stomach-disease which had lasted for twenty-eight years.

[I must express my great regret for two typographical errors that crept into Dr. Dale's paper. At page 167, line 15, "existing" was misprinted for *exciting* and "not" for *fat*.]

THE Review department is unavoidably postponed till next month, in consequence of the necessity of bringing out the first number of the enlarged *Practitioner* on the 26th, according to promise. For the same reason, and because the new "Department of Public Health" has on this occasion exceeded its proper limits, the "Notes and Queries" and "Bibliography" are also postponed.

Clinic of the Month.

The Nature and Treatment of the Constitutional Forms of Eczema.—Dr. E. D. Mapother, in a paper read before the Surgical Society of Ireland, observed that if the interest attaching to a disease be proportional to its frequency, eczema is most worthy of attention, for one-third of skin diseases are forms of this malady.

The causes and treatment of those forms due to sources of local irritation are thoroughly understood; for example, those due to the action of alkalies in washerwomen, sugar mites in grocers, the flow of tears from strumous eyes, the gravitation of the blood in varicose veins, are cured by the removal of the exciting cause and some emollient application, of which bran stupes and bran poultices are the best.

When eczema, on the contrary, affects large surfaces of the body without any local irritation, is symmetrical, apt to relapse, and (as is frequently the case) traceable in several members of the same family, some constitutional cause evidently exists, and should be sought for if we wish to treat the disease scientifically. The French call this cause "the dartrous diathesis," *dartre* being a popular term synonymous with "heat in the blood" in our vernacular; they confess ignorance of its nature, and only recognise it by aptness for relapse in eczema and lichen, and psoriasis as well. Dr. Mapother has long been inclined to hold with Golding Bird that excess of uric acid in the blood is this constitutional cause. Dr. Bird says: "I have been two or three times consulted in the cases of patients lying bed-ridden from rheumatic gout, in whom one or both legs were covered with an eczematous eruption, and the parts on which the exudation from the surface had dried had been actually frosted with microscopic crystals of urate of soda."

The following facts seem to him to prove that the gout poison is the cause of eczema:—

1. Many reliable observers have obtained uric acid and urates from the exudation of eczema, and their increase in the urine in the chronic stage of each disease is undoubted.

2. There is a great increase of fibrin in the blood, and it exudes and spontaneously coagulates on the raw surface.

3. Both diseases are characterised by great tendency to œdema and desquamation, which latter, of course, is universal in eczema, and occurs in three-fourths of the cases of gout when localised.

4. Gout can be shown to be hereditary in about three-fifths of the cases, and such predisposition can be shown in about an equal proportion of cases of general eczema. The greater proneness of the male sex is observable in both diseases.

5. Everyone must have remarked the frequent consequence of symptoms of gout or of rheumatic gout and eczema. The Chelsea pensioners and the poorer agricultural people of this country exhibit this concurrence on the largest scale. I have seen very few cases of general eczema which had not been preceded or accompanied by what is so well known as acid or gouty dyspepsia.

6. It is an aphorism of Hippocrates that gouty attacks are most frequent in spring and autumn, and the same may be undoubtedly said of eczema.

7. The parts most distant from the circulatory force of the heart and least vascular—for example, the extremities and ears—are the most frequent seats of each disease, as the urates are most easily deposited.

8. And lastly, the treatment proven to be useful in gout is usually successful in eczema.

Lithia, Dr. Mapother has found of greatest use, as would be anticipated from its extraordinary powers of combining and dissolving with urate of soda and uric acid. It never fails to act as a diuretic, and the derivative influence from the skin to the more extensive surface of the kidney can be easily understood.

Dr. Mapother usually combines colchicum with lithia.

It would appear that colchicum has no power of increasing the excretion of the solids of urine, but it is now generally believed to check the formation of urea and uric acid, a fact anticipated by the sagacity of Dr. Graves, whose physiological deductions were so remarkable.

In inveterate cases of eczema arsenic may be necessary, and that metalloid is of great repute in chronic gouty and rheumatic affections.

Lastly, sulphur internally and externally, especially when used in the waters of Harrogate, Leuk in Switzerland, and Lisdunvarna, nearer home, is of equal efficacy in gouty and eczematous affections.

A few words about external treatment. Carbolic acid diluted with seven parts of lard keeps the skin pliable, prevents

suppuration and foetor, and has probably some astringent power. In cases of universal eczema, which are rare, starch baths, or, still better, bran baths, are called for, to check the excessive cutaneous transpiration.

Dr. Mapother strives to show that constitutional eczema depends on the gouty diathesis, and should be treated according to the well-known therapeutic indications observed in that condition. (*Medical Press and Circular*, Feb. 19, 1873.)

Therapeutic Effects of the Liquor Sodæ Chloratæ.—The Liqueur de Labarraque, says Dr. Cooper, belongs to a rapidly increasing list of favourite remedial agents,—namely, such as possess the property of arresting or otherwise modifying the putrefactive process; and, rivalled by such drugs as carbolic acid, chloride of aluminium, permanganate of potash, it runs the risk of being supplanted without sufficient reason. On the contrary, an extensive acquaintance with the therapeutic effects of chlorinated soda has convinced Dr. Cooper that it possesses most important properties. It has long enjoyed a favourable reputation on account of its disinfectant and deodorising properties as an application for suppurating and cancerous ulcerations, leucorrhœal and other catarrhal discharges; but Dr. Cooper thinks that in addition it has a plainly marked stimulating effect upon relaxed states of the uterine and peri-uterine tissues, that it gives tone to the weakened utero-sacral ligaments, increases vaginal contraction, removes the bearing down and tendency to prolapse, diminishes congestion of the neck of the womb, thereby lessening very considerably leucorrhœal and menorrhagic discharges; and these effects are followed by the entire subsidence of sympathetic disturbances, the sacral, ovarian, rectal, and vesical distress, the hypochondrial tumefaction, the gastric and præcordial sinking, the sub-mammary stitch, and chest-pains and headache. The method of administration he recommends is to put two or three drops of the ordinary commercial solution in half a tumblerful of water, and direct a dessert-spoonful of this to be taken occasionally. This will be found quite sufficient. Should symptoms of the medicine disagreeing occur, such as rapid emaciation and influenza-like debility, which is one of its most uniformly unfavourable symptoms, it ought to be forthwith discontinued, and the patient advised to remain without medicine for some time. In ulceration of the neck of the womb, hypochlorite of soda, by reducing congestion, gives great relief. (*Dublin Journal of Medical Science*, April 1873.)

The Advantages of Plaster in the formation of Splints.—M. Dubois, of San Rafael, gives a description of the plaster bandage as used by the Germans. The plaster should be per-

fectly dry, and passed through a fine sieve. The roller should be of muslin, which has been washed to remove size, and cut into strips two and a half inches wide and six inches long; each bandage should be spread on a smooth table, and the dry and warm plaster well rubbed into it, and then carefully rolled. Some cotton-wool should also be obtained. Suppose then there is a compound fracture of the leg. The parts must first be cleansed and the fracture adjusted; the leg is held firmly by the foot, and the thigh is kept well off the bed. A roller is now applied neatly from the foot upwards, the wound being covered by cotton-wool, and a thin layer of it placed over the whole leg, with the more prominent parts well padded. A plaster roller is placed in a basin of water for a moment, and applied lightly to the foot and more loosely to the leg; a moment after another one, and so on till the leg is covered by from five to seven layers of bandage. In ten minutes, if the plaster has been properly dried, the leg will be immovable. During this time it should be kept extended by assistants. With a sharp knife an opening is made over the wound, the cotton removed, and the wound exposed. Once well applied, this splint may remain on until the cure is completed, or may be removed by making a long cut on one side, and can then be re-applied if necessary. In fractures of the ribs, the dry plaster roller may be applied around the body, the surface then wetted over the fracture, and after it has set removing it, and refitting the shield again to its place by adhesive strips. In ulcers of the legs it gives firm support, and yet allows the ulcer to be dressed. It answers well in gathered breast. It may also be used to make pressure upon arteries, for the purpose of causing their obliteration. (*The Western Lancet*, No. 12, 1873.)

The Local Use of Tar in Skin Diseases.—Dr. Bulkley, of New York, writes that the use of tar in skin diseases dates as far back as the time of Hippocrates, and that it was used by Pliny, Dioscorides, Galen, and others. It then fell into disuse till it was again recommended in modern times by Cullen, Willan, and Bateman. The tar employed in medicine is commonly that derived from wood, and its varieties are the common wood tar, the oil of tar, the oleum cadini, the oleum rusci, and the oleum fagi. Ordinary wood tar is obtained from the slow combustion of several species of the *Pinus* and *Abies*; oleum cadini comes from the *Juniperus oxycedrus*, and is manufactured in the South of France; oleum rusci is the oil of the birch (*Betula alba*). The pharmaceutical preparation of tar of oldest date is the unguentum picis liquidæ, made by melting together equal parts of tar and suet. Dr. Bulkley has used the ung. picis liquidæ with good effect in scaly eczema, also in two cases

of non-specific palmar psoriasis, combined with sulphur ointment in each instance. When nicely prepared, and fresh, it is not an unpleasant application—very decidedly stimulant, and is especially applicable to ill-conditioned ulcers of the lower extremities. Tar is sometimes employed pure, applied directly to the skin alone, or diluted one-half with olive or cod-liver oil. Hebra frequently directs a bath of an hour or two, while the parts are covered with tar or its oils. As applied in Vienna, the patient, after tarring, lies between blankets completely naked, or sometimes underclothing of pure wool may be put on, and the patient attend to business. Starch may be dusted on to hasten the drying. In applying tar and its preparations, more is to be expected from an energetic friction at the time with a reasonably stiff brush or flannel than from a great expenditure of the substance used. Ill effects sometimes follow its use. It may produce an acute eczema, some skins not tolerating the substance at all; while in others an acne is developed from closure and irritation of the sebaceous orifices. Occasionally high fever, fulness and pain in the head, pain in the stomach, vomiting of a blackish fluid, together with dark-coloured fecal evacuations and urine, occur. A French secret remedy, "Goudron de Guyot," is a pleasant mode of applying it. An exact imitation of this preparation, in which the odour of the tar is pleasantly masked, is found in the following prescription:—

Picis liquidæ ʒij.
Potassæ causticæ ʒj.
Aquæ ʒv. M. ft. sol.

It has the advantage of being easily removed with water. Dr. Bulkley praises highly Hebra's *tinctura saponis cum pice*, than which, he says, nothing is more successful in allaying a raging pruritus. Tar fulfils three indications: (1) it checks irritation and relieves itching; (2) it checks secretion or diminishes the formation of scales; and (3) it improves nutrition or removes cell deposit. The first and last of these are intimately united, the first being frequently dependent on the last, as in true prurigo, when the papules give rise to the itching by the cell-pressure on the nerve termini; a condition seen also in chronic eczema. Tar is unsuited to cases of chronic psoriasis, where the skin is cracked or excoriated, producing too much irritation, though it is very useful in quiescent cases. In like manner, whilst valuable in mild eczema, it is inappropriate where there is much heat and inflammatory swelling. It is often very serviceable in lupus erythematosus, and in the vegetable parasitic diseases. (*Brown-Séguard's Archives of Scientific and Practical Medicine*, No. 2, 1873.)

Resina Copaibæ as a Diuretic.—Dr. Wilks speaks with the greatest confidence of the value of the resin of copaiba as a diuretic. The ordinary copaiba has long been known for its action on the kidney, and is occasionally used in dropsy, but the nauseous taste of the oleo resin has almost forbidden its employment. The oil separated from the resin is officinal, and is often prescribed in gonorrhœa instead of the compound substance. It is thought that the oil acts more especially on the mucous membranes, and is therefore useful in affections of the bronchial, vesical, and urethral surfaces. If this be so, it is equally certain that the diuretic properties reside in the resin. Dr. Wilks has found it very difficult for patients to take the ordinary pharmacopœial drug, and almost impossible to get general practitioners to sanction its administration in private practice; he therefore has substituted for it the simple resin, and finds it equally or more efficacious. He gives fifteen or twenty grains in mucilage and flavoured water three or four times a day, and has had numerous cases showing its marked diuretic properties. There was in Guy's Hospital a man who came in with ascites, and who, after taking numerous other remedies, was ordered the resin. The amount of urine was at once doubled in quantity, and after a few days the fluid almost entirely disappeared. Dr. Wilks states he has lately had as a private patient a "drunkard builder," for whom he likewise prescribed the resin; a diuretic action was at once effected, and the dropsy quickly disappeared. In heart cases also he has given it with great success. Lately there was in the hospital a girl with mitral disease and considerable dropsy, who took the usual medicines without effect, and was then ordered the copaiba. It at once produced the desired effect, and the fluid was dispersed. Dr. Wilks says he has often given the remedy and failed; but, on the other hand, when it has succeeded, the result has been more striking than with any other diuretic he has seen. He would desire to see it introduced into the Pharmacopœia, as it is not kept by chemists, although he is informed it is used largely by perfumers, and the resin thrown away in large quantities as a waste material. (*Lancet*, March 22, 1873.)

Nasal Plug for Epistaxis.—Mr. Godrich sends to the *Lancet* a description of one of his nasal plugs for epistaxis. It consists of a gum-elastic catheter, about six inches in length, over one end of which an elastic bag is stretched, on the other end is tied a small piece of india-rubber tubing; a perforated anterior plug of india-rubber is capable of being pushed along the catheter (it slides much more easily if the catheter be previously wetted). The size of the instrument, even at its thickest part where the bag is stretched over the catheter, is not larger than a No. 6

catheter, so that the bag can, with the utmost ease and with but little discomfort to the patient, be pushed along the floor of the nasal fossa well through the posterior nares; when there, it is to be dilated with ice-cold water by means of an ordinary syringe. The ear syringe answers admirably, the nozzle being inserted into the piece of india-rubber tubing; a thin piece of string tied round this prevents all escape of the water. The bag thus dilated is to be drawn well forward into the posterior nares. The anterior plug is to be pushed into the anterior nares, and, if inclined to slip, may be kept in position by a piece of string tied round the catheter in front of it; it will then be perfectly impossible for either plug to get out of position.

There is not the slightest difficulty in passing the instrument, as Mr. Godrich has proved by frequently passing it through his own nose without provoking sneezing. The dilatation of the bag moreover produces but little discomfort, being entirely above the sensitive false palate and fauces, which are so much irritated by the string passing from the posterior plug through the mouth when Bellocq's instrument is used. Dr. Taaffe, of Brighton, has evidently hit, he says, upon the same idea as his of plugging the posterior nares by means of an elastic bag; but he fears that there are insuperable objections to his instrument. The large nose-bag folded round the sound (which is furnished with the bag) could never be pushed along the floor of the nares. There is difficulty enough in passing Bellocq's sound by itself; how much more difficult then must it be to pass Dr. Taaffe's sound, which is an exact copy of Bellocq's so far as shape is concerned, with the india-rubber bag in addition. (*Lancet*, April 12, 1873.)

Treatment of Cerebral Exhaustion.—In his Croonian Lectures lately delivered, Dr. Radcliffe, after describing the principal symptoms of cerebral exhaustion as failure of memory, depression of spirits, increased or diminished sleepiness, unusual irritability, a continued craving for food or for stimulating drinks, lessened locomotive power, lessened control over the bladder, diminished sexual activity, inequalities of circulation, an aged aspect, disposition to tears, yawning, occasional faintness, epileptiform symptoms, or transitory hemiplegia, or coma, proceeds to consider its prevention and treatment. In diet, he thinks that the present system of urging persons at all weakly, especially children, to eat as much as they can, may have not a little to do in causing the development of many nervous diseases. He is equally opposed to persistence in "training diet" and to Bantingism, believing that the nerve-tissues as well as others may be effectually starved by excluding the hydrocarbons from the food. He further thinks that too much stress is ordinarily laid upon the importance of walking exercise;

much walking, in fact, seeming to be no insignificant cause of the breakdown in the patient's health, and little or no progress is made until he begins to economise his strength in this direction. He is also disposed to maintain that rest from head-work may be too much insisted upon in cerebral exhaustion. He is satisfied he has often met with patients with jaded brains who have certainly let their minds lie fallow too long. Mere distraction is not enough. What is wanted generally, even at the beginning, is not that work should be given up altogether even for a short time, but that it should be moderated in amount or changed. He is of opinion that the wakefulness may be much better combated by attention to the position of the head in sleep than by narcotics. Sleep in bed is, as a rule, sounder with a low pillow than with a high one. On the contrary, if there be undue sleepiness the head should be kept high. (*British Medical Journal*, April 11, 1873.)

Case of Resuscitation of a New-born Infant after nearly four hours' Artificial Respiration. — Dr. J. Marshall, of Limerick, gives the details of an interesting case which demonstrates the value of artificial respiration even in cases that appear to be nearly hopeless. Dr. Marshall was sent for to attend a woman in her third pregnancy. She had been "attended" up to the time of her admission into hospital by an ignorant midwife. On examination he found the right arm and funis (pulsating) in the vagina, and having returned the funis, he "turned" and delivered the patient of an apparently lifeless male child, so much so indeed that the funis was divided, without ligature, to see if any blood would escape from the child, the placenta having been born with the head. Not a drop of red blood issued from the cord, and the child never cried; while slapping, cold water sprinkling, and brandy application failed to elicit the welcome symptom of life. However, when placed on a table and in the light, the pulsations of the heart were faintly visible, so artificial respiration was at once resorted to; the first method tried being that of having one to breathe into the infant's lungs, and another to expel the air from the same. The infant having been laid on its back and rolled in a warm blanket, was so placed that the head extended over the edge of the table, and was allowed to droop a little to prevent the air passing into the stomach. The child's face was next covered with a towel, and the little nostrils having been compressed by the left thumb and fore-finger of the operator (his right supporting the head), air was regularly but forcibly breathed into the lungs, and again expelled from them by an assistant's pressing alternately with his two palms on the infant's chest; brandy being vigorously rubbed into the chest by an attendant. The treatment

after an hour's steady prosecution, and the heart's action scarcely detectable, was rewarded with one voluntary inspiration, but had to be immediately renewed after the gasp, which showed no signs of recurrence without the artificial respiration. Another single gasp occurred in half an hour, but the inflation, &c., had to be kept up, as the breathing apparatus had no strength whatever. Seeing the heart beating even so weakly, the attendants could not, nor were willing, to abandon the little struggler, and each took his turn at the "breathing;" the child got a couple of hot baths. Sylvester and Marshall Hall's treatment were both tried, till, from a combination of all these remedies, the infant was breathing regularly at the rate of 15 per minute after being inflated for nearly four hours, Dr. Marshall not leaving till five o'clock, about half an hour before which time the first drop of blood from the funis tinged the water of the hot bath, in which the child was kept during its convalescence. Out of all the methods of resuscitation employed in this case, the breathing-in and expulsion of warm air had certainly the most beneficial effect on the infant, especially when the mouth-to-mouth breathing was combined with the raising and depressing the arms. (Medical Press and Circular, March 26, 1873.)

Extracts from British and Foreign Journals.

A Modification of the Operation for Phymosis.—The modification proposed by Dr. Harrison Allen is based upon the truth of the following statements :—1. The glans penis lies obliquely backwards to the longitudinal axis of the penis. 2. Contraction of the preputial orifice, from chancres, scars, or other rarer conditions, may create phymosis independently of other causes; but, as a rule, acquired phymosis, particularly if it be complicated with venereal disease, is due to inflammatory thickening of the entire mucous layer. In such cases the glans is compressed, as with a rind, by a stiff inelastic membrane. If there be much narrowing of the preputial chamber, the penis is jammed backwards in its sheath, and its frænum is made tense from a fixed point below, and lies obliquely upwards and backwards.

Writers have cautioned us, in selecting the method of Ricord, not to be guided by the outline of the glans penis as defined through the integument, else too much of the latter may be excised. But even when the operation is properly performed, the incision imperfectly exposes the glans, thus making another incision through the mucous layer necessary. Besides this, the frænum is liable to mutilation by the first cut. This latter is an awkward occurrence, since union, under the best of circumstances, lingers about the frænum, and an undesirable bagginess of the integument at this point too often remains.

Thus briefly indicates Dr. Allen that the essential points of an operation for phymosis should be those that secure integrity of the frænum as well as exemption from too free incision of the skin-layer of the prepuce.

The method of meeting these points is simple. Having first slit up the prepuce upon a grooved director—thus permitting the penis to assume its normal position to the sheath, and the true relations between it and the foreskin to be accurately determined—the operator takes a straight needle, of moderate size, and, arming it with a single strand of well-annealed silver wire, transfixes both layers of the foreskin about a fourth of an

inch in advance of the corona. Before pushing the needle through, that portion of the foreskin in front of the needle is snipped off with the scissors—sufficient tissue being reserved to bring the edges together—when a twisted suture is effected. The needle is next inserted at a point midway to the frænum, and the same procedure repeated as in the first instance. In consequence of the redundancy of the skin about the frænum, the division of the mucous layer is best effected at that point before that of the skin. The scalpel is better than the scissors for this purpose. The skin should be removed by the latter instrument after transfixion. Two sutures introduced upon the opposite side, in the manner already given, complete the operation. Should the spaces between the wires gape, they may be approximated by silk threads. These may be removed within twenty-four hours. The silver wires should be retained a day longer.

It will at once be seen that the retraction of the skin-layer is prevented by transfixing the two layers at the same point before the removal of the integument. This, indeed, is the gist of the whole matter. The slitting of the prepuce, instead of being a mere expedient to remove pressure from a threatened glans, or to explore for a concealed chancre—uses to which it is commonly restricted—becomes a stage of the operation of circumcision. Moreover, it enables the operator to dispense with the use of the fenestrated forceps.

This operation has been performed by Dr. Allen and others fourteen times, and has given entire satisfaction in every instance. (*Philadelphia Medical Times*, No. 46, 1872.)

Treatment of Psoriasis with Acetic Acid, by Dr. Buck.—

The exact method of making this application is as follows :—First the superficial scales are to be removed by the aid of frictions with soft soap and warm water ; after which different portions of the diseased skin are to be attacked by acetic acid, which is to be painted on by means of a small camel-hair brush. The extent of skin which can be daily treated in this manner will depend very much upon the susceptibility of the patient to the action of the remedy, his ability and willingness to endure the consequent smarting, which would appear to be by no means inconsiderable. As the patient becomes more tolerant of this caustic, the applications may be made more frequently, and a larger area may be painted at one sitting. As the result of the application of this agent, the tissue becomes white and puffs out, while the surrounding skin becomes red and inflamed, all of which is attended by a moderately severe smarting which usually subsides in the course of fifteen minutes. The layers of epidermis, which at first are rendered softer, soon dry up and

assume the character of thin, horny scales, which in a few days either fall off of themselves or are readily detached, after which the application of the acid is to be renewed. If the smarting continue for any length of time, or if a severe irritation of the surrounding tissue be produced, as indicated by extensive swelling and redness, the treatment is to be suspended for the time being, and some soothing application, such as lead wash, is to be made to the irritated tissue. The acid may be applied in this manner from two to three times daily, as the patient may wish, until the red indurated and thickened tissue is entirely removed, and its space supplied by a smooth soft skin of the natural colour. No eschar remains upon the affected spot. In cases of long standing a dark-coloured pigment may somewhat discolour the skin for a time, but even this disappears after a while, which, in cases where the psoriasis has had its seat upon the face, is a matter of no little importance to the sufferer. Upon the healthy tissue the acetic acid exerts little or no effect, acting merely as a rubefacient. The time required for the accomplishment of a thorough cure varies from four to eight weeks, depending upon the degree of vigour and persistency with which the treatment is applied, and also upon whether the eruption is of long or short duration.

Regarding psoriasis as a strictly local affection, Dr. Buck has invariably discarded the use of any internal remedies, such as arsenic, carbolic acid, &c., and the results of his external treatment above described seem to be attended with uniform success. One case is reported of a young lady, aged thirty, whose body was almost entirely covered with diseased patches (psoriasis universalis), varying in size from a split pea to the palm of the hand, whose cure was effected inside of eight weeks. In psoriasis syphilitica, which is not strictly included under the same head, the ordinary anti-syphilitic remedies are of course indicated. The acetic acid treatment appears to have been pretty thoroughly tested for a number of years by Dr. Buck in his hospital wards, and he confidently recommends it to general practitioners, maintaining that it can be carried out *tuto* if not both *cito et jucunde*. To those whose appetites have often succumbed in vain to nauseating doses of arsenic, so empirically prescribed by the English school of dermatologists, the announcement of this new and simple method of cure will be particularly gratifying. (*New Remedies*, vol. ii. No. 3, January 1873; *Boston Medical and Surgical Journal*.)

Treatment of Diabetes.—According to M. O. Schultzen, of Dorpat, the principal combustible matters of the organism are the fats, and glycerine and the aldehyde of glycerine. These two last bodies arise from the decomposition of sugar according

to the formula $H_2 + C_2H_{12}O_6 = C_3H_6O_3 + C_3H_8O_3$. In a patient suffering from diabetes, the ferment which ordinarily determines the decomposition of sugar is absent; and the sugar, not being burnt in the organism except it has previously been decomposed, is excreted in the natural condition by the diabetic. The patient not only loses without utilising one of the principal combustible matters, but he even has to furnish the work requisite for its transport and excretion. To perform this work large quantities of combustible albuminates are required: an insatiable appetite is the result. The concentration of juices provokes great thirst and consecutive troubles of nutrition (cataract, tubercles, boils), which are all sufficiently explained by this alteration of the juices. These various troubles of nutrition disappear completely if the patient is ordered his usual combustible glycerine, and if the amylaceous compounds are avoided in the diet prescribed for him. These different statements are in perfect harmony with the law recognised by Voit, that muscular exertion does not determine the decomposition of nitrogenised compounds, but cause a more abundant formation of carbonic acid, and in consequence a more or less action of non-azotised substance. In conformity with the results of his researches, Schultzen recommends the following prescription to be used in cases of saccharine diabetes:—

R Glycerini purissimi grammes xx—xxx.
 Aq. Fontanæ lb. ij.
 Acid. citrici vel tartarici grammes v.

To be drunk at intervals through the day. If the dose of glycerine be augmented to sixty grammes or more, diarrhœa often follows, whilst the above dose may be used for months without inconvenience. (*Berlin Klin. Wochenschrift*, 1872, p. 418.)

The Action of Digitalis.—The forty-eighth number of *Volkmann's Klinische Vorträge* contains an essay by Professor Ackermann, of Rostock, on the action of digitalis. The active agent of digitalis, digitalin, he says, first obtained by Homolle in 1845, exists in largest proportion in the leaves, and belongs to the chemical type of the glycosides, since on boiling with dilute sulphuric acid it breaks up into grape-sugar and two other organic bodies. It is a substance that is easily soluble in alcohol, but which dissolves with difficulty in ether or water, of greenish white colour, and incapable of crystallisation. The physiological action of the ordinary infusion of the leaves of digitalis exactly agrees with that of Homolle's digitalin. This action is essentially referable to its influence on the heart and blood-vessels. In the first place, it is certain that infusion of digitalis or digitalin lowers the frequency of the pulse; and

this is principally due to prolongation of the diastole, for whilst the duration of the systole as exhibited by kymographic tracings remains unaltered, the diastole is prolonged to three or four times its previous duration. Edward Weber, it is well known, first showed that by mechanical, chemical, or electrical irritation of the vagus, the frequency of the heart's contractions was diminished, until ultimately, if the stimulus were very powerful, complete arrest of its movements could be effected, and that this took place in diastole. In mammals and man an inhibitory influence is constantly being exerted by the medulla oblongata on the heart through the vagus, for on section of these nerves the heart's beats suddenly rise. Section of the trunks of the vagi, however, does not completely prevent the influence from being exerted. The peripheric vagus elements distributed in the heart must therefore possess some power in this direction independently of the centre. Traube observed that the retardation of the pulse occurred if before the introduction of the digitalin the vagus trunks were divided, and concluded that this action of the digitalis was effected through the *cardiac* vagus. Traube's view was corroborated by the remarkable discovery of Von Bezold and Blöbaum, that in atropine we possess a means of completely abolishing the activity of the vagus, and therefore of its cardiac fibres. If, for example, 0.01 of a gramme of atropine be injected into a dog, the vagus loses its excitability from the centre to the periphery; and if digitalis be now injected, no diminution takes place in the frequency of the pulse.

The primary action of digitalis is thus shown to be an excitation of the inhibitory fibres of the cardiac vagus, and consequent diminution in the frequency of the pulse. When this stage has lasted for some time, a stage of paralysis of the vagus occurs, just as after section of the vagi, or after atropine poisoning, and a sudden and considerable elevation of the pulse frequency is observed, during which sudden and permanent arrest of the heart's action, causing death, occasionally takes place. More frequently the rhythm of the pulse is disturbed, so that a few small beats intervene between longer and larger ones in a very irregular manner. Possibly the former may be due to the contraction of the auricles, whilst the latter are the ordinary ventricular beats. When this stage is reached, the activity of the heart never resumes its ordinary condition, and death is the certain consequence. The final arrest of the heart's action, which is the immediate cause of death in poisoning by digitalis, is due to great diminution or complete abolition of the excitability of the muscular tissue of the heart, so that it will no longer respond to the most powerful induction currents.

In addition to the effects produced by digitalis on the pulse
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and on the heart's action, there is another very important influence exerted upon the circulatory processes, which becomes visible in kymographic traces. This consists in a very great augmentation of the blood pressure. Immediately after, or even during the very act of injecting solution of digitalin, the blood pressure increases coincidently with the diminution in the frequency of the beats, sometimes rapidly and sometimes more slowly, but always continuously to a certain height. It then falls gradually, and ultimately, just before the stoppage of the heart, descends in a steep line to 0. This increase of blood pressure is essentially due to the contraction of the smaller vessels; such contraction is actually apparent in the vessels of the mesentery of a rabbit poisoned with digitalis; and that it is due to this, and not to the accumulation of carbonic acid in the system, is demonstrated by its occurrence even when artificial respiration is maintained, and when all voluntary movements are abolished by the use of woorara. Traube and Böhm satisfied themselves that the contraction of the small arteries is a consequence of the excitation of the vaso-motor centre in the medulla oblongata, since it does not occur if the spinal cord is divided in the neck just below the medulla oblongata.

Professor Ackermann does not coincide in this view, however, but maintains that the contraction of the small arteries is due not to the excitation of the vaso-motor centre, but to the direct action of the poison upon the peripheric extremities of the vascular nerves, and perhaps even upon the muscular tissue itself.

To complete the explanation of the augmented pressure of blood in the arterial system after the use of digitalis, we must admit that, besides the contraction of the small arteries, the musculature of the heart undergoes no diminution in strength. Böhm even believes he has demonstrated that in the frog the force of the heart actually increases after the injection of digitalin, quite independently of the blood pressure.

Coincidentally with the elevation of pressure in the arterial system there has been observed a diminution of temperature in the interior of the body. According to Heidenhain, with the increased blood pressure in the aorta there is an increase in the rapidity of the blood current, in consequence of which large quantities of cooled blood from the periphery in a given time traverse the internal organs and abstract heat from them. This explanation is not in opposition to the diminution in the frequency of the pulse, for the old idea that a slow pulse indicates a slow circulation is opposed by experiment.

As regards the therapeutic uses of digitalis, Traube has the merit of having pointed out that its value in correcting the disturbances in the circulation caused by organic disease of the

heart is essentially referable to mechanical conditions. This especially holds in regard to the general venous hyperæmia which commonly accompanies organic disease of the heart. This is dependent on general anæmia of the arteries, which originates as soon as by insufficient compensation by hypertrophy the musculature of the heart is no longer in a position to drive a sufficient supply of blood into the aorta. Two physiological effects of digitalis then act in a remedial sense: the increase which it produces in the force and regularity of the contractions of the heart, and the contraction of the smaller arteries. The action of the drug is therefore most effective in insufficiency of the mitral valve. In disease of the aortic orifice, compensation by hypertrophy continues to take place for so long a period that the use of digitalis may be dispensed with. Digitalis plays an important part in the treatment of the state originally pointed out by Stokes as "weak heart," which is referred by German physicians to fatty and granular conditions of the muscular tissue of the heart.

Digitalis acts as a diuretic only so far as it induces a dilution of the blood, and indirectly an increase of the urinary secretion by aiding the resorption of the transudate and dropsical condition due to the feebleness of the heart's action. Perhaps in this manner the augmentation of the blood pressure is in some measure explicable.

Traube ascribes the diminution in the frequency of the pulse produced by digitalis in cardiac disease to improved nutrition of the muscular tissue, the longer diastole giving it more time to recuperate.

Lastly, in regard to the action of digitalis in febrile conditions of the system, the only points that need be referred to are its influence on the increased frequency of the pulse and upon the high temperature. Both symptoms are diminished in intensity by digitalis, and may even for a time be altogether removed. That a prolongation of the pulse does not always indicate diminished rapidity in the blood current has already been mentioned. Pathological investigation renders it probable that infrequent but vigorous contractions of the heart cause the passage of a larger quantity of blood through the heart in a given time than frequent and feeble contractions. It is remarkable that in febrile affections a want of rhythm of the pulse easily occurs after the protracted use of digitalis; a circumstance to be particularly borne in mind, since the danger of a high febrile temperature is in fact attributable to the paralyzing effect of the latter upon the heart.

Moreover, the fall of temperature after large doses of digitalis does not appear in fever, as in physiological experiments, to be due to the cooling of the blood in its more rapid passage through

the cutaneous capillaries, but rather to an asthenic condition being established in addition to the diminution in the frequency of the pulse. From these circumstances it arises that the use of digitalis in fever is apt to occasion great disturbance of the digestive powers, exhibited in want of appetite, nausea, and vomiting, which does not occur in cardiac affections. Hence the advisability of prescribing digitalis in febrile affections, especially as its antipyretic action is never long maintained, is doubtful, whilst its use in cardiac affections is indispensable. (*Der Praktische Arzt*, Jan. 1873.)

Treatment of Tetanus by Active Catharsis and Extract of Indian Hemp.—Dr. B. Roemer, of St. Louis, gives an interesting case of a soldier who received a bullet wound of the arm, the ball entering on the ulnar side of the wrist, running upwards near the interosseous space, and passing through elbow-joint, with exit at middle third of the upper arm. Omitting the treatment of the wound, he found on August 25, more than three weeks after admission, that the bowels were much confined, and hence ordered him to be sharply purged. He complained at the same time of pain in the arm and epigastrium, and general listlessness, with uneasiness at the præcordia. In the evening he was attacked with violent cramp in the belly and stiffness in the jaw, and on the following morning he lay immovable, stretched out, and having contraction of the muscles of the larynx and neck. Distressing pains darted over the whole body, and at the height of the spasms, at intervals of from two to six minutes, the contents of the bladder were forcibly ejected. Perspiration, difficult and laboured respiration, with pain between sternum and spinal column, were added. At 5 P.M. the voice was sensibly altered; the wound had become hot and dry; the intermissions between the spasms had become shorter, and they were now provoked by touch, or even by muscular volition. His mind remained unimpaired. The temperature for the first fourteen hours was 105° Fahr. The treatment up to the evening of the 26th consisted in the repeated exhibition of cathartics: castor oil, ol. tiglli, elaterium, with calomel, aided by enemata of progressively increasing strength. And now he was ordered half a grain of the extract of Indian hemp and two grains of quinine every hour, increasing the extract after the third dose to one and one and a half grains per hour. His bowels acted on the 27th at 12.30, and he had then taken twenty-three grains of the extract of hemp. The same doses were continued till 5 P.M., when the symptoms had so materially abated that the original dose of the hemp was prescribed. The condition of the arm necessitating an operation, amputation was performed at 3 P.M. on the same day. Trismus remained for

five days, with an inexplicable stiffness of the whole body. The dose of the cannabis indica was reduced to one-fourth and one-eighth grain doses at longer intervals; total amount taken, 146½ grains. The arm on dissection disclosed a spiculum of bone pressing on the median nerve, without, however, affecting its calibre or condition. The stump had healed on Sept. 18.

In a second case of bullet wound of lower jaw, opisthotonos appeared, with obstinate constipation and pain at the præcordia at the end of the second week. Similar treatment caused relief of the tetanus on the fourth day, and the patient made a good recovery. In a third case of injury to arm, tetanus set in on the third day, amputation having been performed on the first day. He made a good recovery in six days, after taking sixty-three grains of the extract. In a fourth, the wound was of the wrist: tetanus set in on the eleventh day, and amputation was performed five days afterwards. The treatment was the same. Spasm disappeared on the fifth day, and he fully recovered on the ninth day. In a fifth case of bullet wound of the arm, tetanus commenced on the fifteenth day, amputation having been performed on the second. In this case opium, in one, two, and three grains, was given every or every alternate hour; but no good results following, the quinine and cannabis indica treatment was resorted to, and recovery took place in eleven days, the patient having taken fifty-one grains of the extract. Temperature at one time, 103°·5. (*St. Louis Medical and Surgical Journal*, February 1873.)

Chloro-albuminate of Mercury for Hypodermic Injection in the Treatment of Syphilis.—M. Staub has lately suggested a new fluid, which possesses various advantages over a simple solution of corrosive sublimate, where the hypodermic injection of this salt is required, and of which the following is the formula:—

Bichloride of mercury, gram. 1·25.
Hydrochlorate of ammonia, gram. 1·25.
Chloride of sodium, gram. 4·15.
Distilled water, ccm. 125·00.
Dissolve and filter.

One gramme of this liquid (fifteen minims), or about an ordinary Pravaz' syringeful, contains exactly five milligrammes of sublimate. The pain produced by this fluid is much less than with pure solution of corrosive sublimate, but where the patient is hypersensitive, a small quantity of a solution of hydrochlorate of morphia may be added to the extent of about two and a half milligrammes per gramme. The average dose injected is about one centigramme of the sublimate *per diem*, in two injections.

In severe cases two or three centigrammes may be injected; in newborn children two milligrammes is sufficient. M. Staub states that he is indebted for this formula to M. Hepp, the late regretted chief dispenser of the hospital at Strasburg, and recommends that the injection should be made on the inner surface of the arm or of the thigh, on the buttock, or in the back below the angle of the scapula, but never in the fore-arm or leg, where it produces swelling and severe pain, which sometimes lasts for several hours. It is highly important that a perfectly clear and transparent solution should be used, and it is prudent to filter just before injection, and to take care that the fluid enters completely into the meshes of the connective tissue. Lastly, the injection should be made very gently, so that the least injury to the connective tissue fibres should be avoided. (*Gazette Méd. de Strasbourg*, 1872, and *Bulletin Générale de Thérapeutique*, No. 6, 1873.)

Radical Cure of Fistula in Ano.—Dr. Hute recommends the injection of a solution of iodine in ether instead of the ordinary tincture of iodine, on the ground that the ether, being more volatile, escapes more rapidly, leaving the walls of the fistula in contact with pure iodine. The reaction is insignificant, and there is no occasion for the patient to keep his bed. (*Le Mouvement Médical*, No. 1, 1873.)

Treatment of Ulceration of the Neck of the Uterus.—M. Gallard, in a series of lectures delivered at l'Hôpital de la Pitié, states that when ulceration affects the interior of the neck of the uterus, it can generally be diagnosed by widely opening the valves of Ricord's speculum and allowing a flood of light to enter; whilst he has not found much advantage from the employment of *intra-uterine* specula on account of their small size, nor from M. Desormeaux's endoscope, in consequence of the presence of a small quantity of blood which almost always enters the instrument. The propagation of the ulceration into the cavity of the neck he maintains is very frequent, though Mayer, of Berlin, thinks that the normal mucous membrane is often mistaken for an ulcerated surface. M. Gallard then proceeds to describe various forms of ulceration admitted by authors, as the papillary and varicose ulceration, or ulceration of pregnancy, the herpetic, scrofulous, and tubercular forms, without laying much stress upon them or appearing to consider that they can really be distinguished. In regard to the etiology of the affection, he puts aside leucorrhœa, injury during intercourse, and friction against the walls of the vagina, as imaginary or extremely improbable, and attributes it either to simple inflammation, to syphilis, or to cancer. Chancres usually occur towards

the posterior part of the neck, near the point of reflection of the vagina, or at least at some distance from the *os tincæ*, though occasionally they may affect the orifice itself. The treatment of ulceration of the neck of the uterus should be in the first place directed to the removal of chronic metritis: at the same time it is advisable to cauterise the ulcers, and thus to produce some local change in the parenchyma. Thus the surface of the ulcer may be touched with a solution of nitrate of silver (1:4), with the tincture of iodine, or with perchloride of iron, especially when the surface is bloody. When the ulceration becomes vegetant, more energetic caustics may be used, as chromic acid, or the acid nitrate of mercury; but in every case care should be taken, before removing the speculum, to inject a full stream of water, with the object of preventing cauterisation of the adjoining parts. In regard to the actual cautery, it is most useful when the neck of the uterus is very large. Lastly, slightly astringent injections should be used to cleanse the ulcerated surface and to remove the products of suppuration; and after these the application of absorbing powders, such as bismuth or starch mixed with alum, prove extremely useful. (*Ibid.*)

Carbuncle and its Treatment by Subcutaneous Aspiration.—In a paper contained in the *Mouvement Médical*, M. Peltier states that in his opinion the crucial incision is one of the best methods of treating anthrax; but it may also be advantageously divided by S. Guérin's subcutaneous method. For nervous patients, the following treatment, recommended in the Belgian journal, the *Scalpel*, is very useful:—The canula of a hypodermic syringe is introduced into the centre of the tumour, and the piston is drawn up; if any pus be present, it rises. The syringe is then removed, the canula remaining *in situ*, and emptied. The syringe is again connected with the canula, and a second quantity of pus is removed by the raising of the piston. This is repeated till all the pus is removed: the canula is now withdrawn, and the tumour is painted with the following fluid:—

Collodion, 1 drachm.
Castor oil, 20 drops.
Carbolic acid, 4 grains.
Tannin, 22 grains.

(*Ibid.*)

Carbonate of Ammonia in Uræmia.—Prof. Rosenstein, of Gröningen, has published in *Virchow's Archiv* a series of experiments on the effects of injection of carbonate of ammonia into the blood of living animals, and also a couple of cases of death from uræmia in man; and the conclusions he arrives at

are, that carbonate of ammonia introduced in sufficient quantity into the blood is able to induce a series of symptoms resembling epilepsy. The convulsions thus produced are of cerebral origin, and are probably induced by the direct action of the drug on the nerve substance. Previously induced narcosis from morphia, chloral hydrate, or chloroform, has no influence in preventing the seizures. The non-striated muscles are not affected by the convulsions, and abortion is not induced in pregnant animals; nor are the fetuses in any way injured. All the symptoms thus induced are transitory, if the kidneys be healthy; elimination through the lung occurs only to a very slight extent. The convulsive phenomena could even disappear though the kidneys were removed; but it was not ascertained whether the carbonate of ammonia was excreted by the skin or transmuted in the blood. In rare cases paraplegia is also a symptom of poisoning by the carbonate of ammonia. The most important difference between uræmia and ammoniæmia are, that the latter only produces epileptiform attacks, whilst the former also induces coma, convulsions, and delirium. Moreover, symptoms precisely resembling those of ammoniæmia, associated with the existence of carbonate of ammonia in the blood, are often found occurring without this coincidence. There is also no relation between the intensity of the uræmic symptoms and the amount of ammonia. Further, in regard to the eclampsia of pregnant women, it must be remembered that narcotics, which so frequently exercise a favourable effect, are without influence in the convulsive attacks of ammoniæmia. Finally, the nervous symptoms, which so frequently terminate chronic bladder and prostatic affections, and which Jarisch has called the results of ammoniæmia, have no resemblance whatever to the actual results of poisoning by ammonia. (*Virchow's Archiv*, and *Edin. Med. and Surg. Journal*, March 1873.)

The Removal of Foreign Bodies from the External Auditory Meatus.—Dr. Gruber, of Vienna, after recommending the use of injections, proceeds to discuss the question whether any additional means can be used which may in some instances facilitate the removal of foreign bodies from the ear. Injections can of course only prove successful when the fluid can gain entrance between the foreign body and the membrana tympani; what must be done when the body is so tightly wedged in that this is impracticable? Voltolini has recommended the application of the galvano-caustic, by which the body may be partially destroyed or broken down; and this has been proved to answer fairly well in the case of bodies that, like beans, peas, and kernels of various fruits, are bad conductors of heat, and are not therefore likely to do harm to the adjoining parts of the ear.

Löwenberg, again, proposes the employment of a glutinous substance, as birdlime, which may be attached to the body, and, when it has hardened to some extent, may enable it to be withdrawn. Gruber thinks that this plan may sometimes be successful, when the foreign body is not too deeply imbedded in the meatus. He has himself adopted a totally different plan, which he thinks is applicable to many cases of the fruits and kernels of plants, viz., the injection of fluids which will cause them to shrink. He made a series of experiments with different fluids which were not likely to injure the ear, and amongst these were alum (gr. x ad ʒj), sulphate of zinc (gr. v ad ʒj), sulphate of copper (gr. j ad ʒj), tannin (gr. v ad ʒj), and aqua calcis (ʒij ad ʒvj). In these fluids the legumes were laid, and the effects observed after the lapse of various periods. It appeared that they became smaller only in the zinc solution and in the dilute lime water; in the other fluids they on the contrary swelled. He recommends, therefore, that one or other of these fluids should be injected several times a day, and then after the lapse of a few days gentle attempts at extraction made with the usual instruments. A little manipulation of the auricle, especially in young children, will often facilitate the removal of the body. (*Allegemeine Wien. Med. Zeitung*, No. 43, 1872.)

Beneficial Influence of Ammonia in Silvering Establishments and others where Mercury is used.—According to M. Meyer, ammoniacal gas has exerted a most happy effect on the health of the workmen in the great looking-glass factory of Chauny. Having observed by chance that the penetrating odour of this gas modified the close suffocating odour of the workshops, he has directed, since 1868, that the floors of the various rooms be watered every evening with liquid ammonia. About half a litre is found to be quite sufficient for the purpose. The explanation is not very clear, but he vouches for the good that results from it. (*La France Médicale*, March 1873.)

Department of Public Health.

[In this section, now first added to the *Practitioner*, it is proposed to discuss questions relating to the polity and practice of hygiene—in other words, questions concerning health in its public and private relations. The organization now in progress under recent Acts of Parliament, of a sanitary medical staff in all parts of the kingdom, renders it necessary, consistently with the original design of this Journal, to give separate consideration to the different subjects which refer to the special duties of this staff. To this end the Editor in future will devote a section of the Journal, and he purposes to make this section on the one hand a record of the scientific work that is being done in this department of medicine, and on the other hand a current commentary on all important matters which concern the particular duties of a Medical Officer of Health, and the relations of the State to the health of the community.—ED.]

SANITARY ORGANIZATION IN ENGLAND.¹

A NEW era in the sanitary organization of this country has been inaugurated by the passing of the Local Government

¹ An Act for constituting a Local Government Board, and vesting therein certain functions of the Secretary of State and Privy Council, concerning Public Health and Local Government, together with the powers and duties of the Poor Law Board.—34 & 35 Vict. ch. 70.

An Act to amend the Law relating to Public Health.—35 & 36 Vict. ch. 79.

Orders of the Local Government Board relating to the Appointment and Duties of Medical Officer of Health by Urban and by Rural Sanitary Authorities.—(11th November, 1872.)

Orders of the Local Government Board relating to the Appointment and Duties of Inspector of Nuisances by Urban and by Rural Sanitary Authorities.—(11th November, 1872.)

Circular Letters of the Local Government Board to Urban and Rural Sanitary Authorities relating to the above-mentioned Orders.—(12th November, 1872.)

Board Act of 1871, and the Public Health Act of 1872. In the first-named Act the supervision of the laws relating to the public health, to the relief of the poor, and to local government, and the registration of births, deaths, and marriages, which had been carried out by the Privy Council, the Poor Law Board, and the Home Office respectively, have been concentrated in a new Department of the Government, designated the Local Government Board; the Poor Law Board ceasing to exist. The new Board consists of a President and certain *ex-officio* members, and it is authorized to appoint Secretaries and other necessary officers, the President and one of the Secretaries being permitted to sit in Parliament. The administrative staff of the Privy Council for Health purposes—namely, the Medical Department, that of the Home Office for purposes of local government, and that of the former Poor Law Board—were transferred to the new Board, and together constituted its administrative staff when first formed; and the Board was authorized to distribute the business which devolved on it among the several transferred officers in such manner as it might think expedient. The Right Hon. James Stansfeld, M.P., the President of the Poor Law Board at the time of the passing of the Local Government Board Act, was appointed President of the new Board; J. T. Hibbert, Esq., M.P., the Parliamentary Secretary; and John Lambert, Esq., Inspector of Poor Law Auditors, and Henry Fleming, Esq., Secretary of the Poor Law Board, were made Secretaries. In fact, with the exception of the Parliamentary Secretary, and the promotion of Mr. Lambert to a Secretaryship, the administrative organization of the Local Government Board remained that of the Poor Law Board, but with the following additions:—(1) The staff of the Medical Department of the Privy Council Office; John Simon, Esq., D.C.L., F.R.S., becoming the Medical Officer of the new Board: (2) the engineering staff of the Local Government Act Office; Tom Taylor, Esq., the Secretary, retiring: and (3) the staff of the Registrar-General's Office.

By the Public Health Act, 1872, the whole of England was divided into Sanitary Districts, designated respectively *Urban Sanitary Districts* and *Rural Sanitary Districts*. The urban sanitary districts included boroughs, districts formed under the Public Health Act and the Local Government Act, and under

various local Acts; and the Town Councils, Local Boards, and Improvement Commissioners were constituted the urban sanitary authorities in their respective districts. The rural sanitary districts were formed from the respective rural poor-law unions, with the exception of such portions (if any) which were included in urban sanitary districts; and the Board of Guardians of the Union was made the rural sanitary authority. To the urban sanitary authorities were given the powers, and upon them were imposed the duties, contained in the Local Government Acts, the Sewage Utilization Acts, the Nuisance Removal Acts, the Common Lodging House Acts, the Artizan and Labourers Dwellings' Act, the Bakehouse Regulation Act, and, where in force, the Baths and Washhouses Acts and the Labouring Classes' Lodging Houses Acts. In any urban sanitary district in which the two last-named Acts were not in force, permission was given to the sanitary authority to adopt them. To the rural sanitary authorities were attached the powers and duties contained in the Sewage Utilization Acts, the Nuisance Removal Acts, the Common Lodging Houses Acts, the Diseases Prevention Act, and the Bakehouse Regulation Act. The Act required every urban sanitary authority to appoint a medical officer of health. It required also every rural sanitary authority to appoint a medical officer or officers of health, and an inspector or inspectors of nuisances, with other necessary officers, the appointment in the first instance being limited to five years. It gave, however, to the Local Government Board "the same powers as they have in the case of a district medical officer of a union with regard to the qualification, appointment, duties, salary, and tenure of office of a medical officer of health or other officer of a sanitary authority, any portion of whose salary is paid out of moneys voted by Parliament."

The Act, further, gives to the Local Government Board certain powers for the constitution of *Port Sanitary Authorities*, for the alteration of areas and union of sanitary districts, and for the application of urban sanitary provisions to rural sanitary districts; and it makes the necessary provisions as to the expenses of the different sanitary authorities, transfer of property, and raising of money. It transfers also to the Local Govern-

ment Board the powers and duties of the Board of Trade under the Alkali Act, 1863, and Metropolis Water Acts, 1852 and 1871.

The two Acts of Parliament, the principal provisions of which have thus been briefly described, are the first legislative results of the work of the Royal Sanitary Commission of 1869-70. They were constructed upon the lines laid down by that Commission, and they were designed to rectify defects in the sanitary organization of the kingdom, both central and local. Before the passing of the "Local Government Board Act, 1871," there was no systematic concert between the different departments of the Government entrusted with the supervision of the public-health laws. This had led to not a little confusion in their action, and to much weakening of their beneficial influence. By bringing together the health-functions of these departments under one Minister, it was believed that these hindrances to efficiency would be removed; and by giving to the same Minister the control of poor-law administration, it was thought that certain important medical questions involved in the relief of destitution—questions that had never before, except incidentally, been regarded in their bearings upon public health—might be systematically dealt with from the point of view of preventing disease in the general community. Before the passing of the "Public Health Act, 1872," the local sanitary organization of England was, with the exception of a few hundreds of places, in utter confusion. The ordinary parish was everywhere provided with two local sanitary authorities. The guardians were the authority for dealing with some sorts of nuisance; the vestry the authority for dealing with other sorts of nuisance, and for carrying out works of sewerage and water-supply. The guardians, for example, were the authority for pig-sties, and the vestry the authority for privies; yet not entirely so, for while the vestry was required to prevent the privy becoming a nuisance, the guardians had to look after it if it became a nuisance. In most places so circumstanced the vestries were entirely ignorant of the sanitary duties which the Legislature had imposed upon them, and had of course never exercised their sanitary powers; and such sanitary action as had been taken in those places, if there had been any sanitary action at all, had

been carried out in an irregular and imperfect fashion, with respect to a few nuisances, by the guardians. In those exceptional places where vestries had come to some knowledge of their sanitary duties, the confusion arising from two separate sets of sanitary authorities in the same area, and the confusion of the law as to their respective duties, made effective action almost impracticable, and discredited sanitary work. The "Public Health Act, 1872," by constituting one defined sanitary authority, with fairly-defined powers and duties, in all rural districts, and requiring from it the appointment of all officers necessary for its effective action, has done away with the confusion and contradiction of the previous state of things, and rendered efficient sanitary work, within the limits (as yet too strait) of the public-health laws, practicable in every part of the kingdom.

On the first aspect the two Acts of Parliament under consideration appear to make good the ascertained defects of our sanitary organization, whether as regards central or local government; but their operation to the present moment has caused the profoundest disappointment and dissatisfaction. The intentions of the Legislature in regard to these Acts have to be judged by the Report of the Royal Sanitary Commission, and by the discussions which marked their passage through Parliament; and these intentions are being frustrated in some of the most important particulars by the action taken for the initiation of the Acts by the Local Government Board. The explanation of this miscarriage of legislation is to be found in the description we have given of the Local Government Board. This Board is simply, and for all practical purposes, the old Poor Law Board in organization, tradition, and practice, with the former scientific sanitary staffs of the Privy Council Office and Home Office handed over to it to be used as it thinks fit, limited only by the statutory position of the Medical Officer. The Royal Sanitary Commission, when recommending the appointment of one Minister over Sanitary and Poor Law, saw the danger, even in appearance, of "subordinating the care of health to the provision for infirmity, and the economy of public wealth to the relief of destitution." The Commission held that the Minister should have charge of "two distinct though correlative departments," sanitary administration forming one sub-department,

and poor-law administration another sub-department. Now, with an amiable confidence in official humanity, no security was taken by the Legislature against the danger, which the Commission foresaw, of sanitary work being subordinated to poor-law work, and no provision was made for that correlative departmental action of the new Board which the Commission advised. The blunder deprecated by the Commission has been perpetrated, and sanitary work of the Board is being absorbed and masked in its poor-law work, the whole care of the public health being dragged down to the level of poor-law sanitary administration.

How completely the sanitary policy of the Local Government Board in dealing with the health of the kingdom is intended to be carried on upon the same principles that have characterized the policy of the old Poor Law Board, Mr. Stansfeld himself has told us in unmistakable terms. Addressing a deputation of medical men in November last, he said:—

“I do not believe in harmonious relations between bodies of men conducted entirely by correspondence. I think if you have to deal with men you should deal with them through men, and therefore I became convinced, even before the additional duties in regard to health were imposed on this department, that it was sound policy to give certain higher duties and greater responsibility to our general inspectors, whom I have been accustomed to call the negotiators between the local bodies and ourselves. Even in matters of poor-law administration, a year or more ago I successfully carried out that policy by entrusting certain duties concerning the administration of out-relief to the inspectors, and leaving it to them to work out the matter with the various boards of guardians, and to invite and promote conferences of guardians to discuss all these questions. You will possibly not be unaware that the result has been a considerable improvement in the administration of out-door relief and the diminution of charge. Following out that policy, I find that when the Public Health Act was passed, that instead of having to deal with 700 or 800 boards of guardians, we had now to deal with 700 or 800 boards of guardians and another 700 or 800 local boards or town councils, acting in two capacities, firstly as municipal authorities and secondly as health authorities. It seemed to me

under these circumstances more than ever necessary that I should be able to rely upon my negotiators, and that the local boards should be able to feel that there was some one person with whom they could have oral communication, and who should represent the policy of the Local Government Board. I therefore determined to make the poor-law inspectors the Local Government Board inspectors for all purposes between this department and the local bodies, including boards of guardians. I wanted them men of experience and tact, accustomed to deal with men, knowing the boards of guardians, and having their confidence. I wanted them to initiate the working of this new Act; and in order to give them time and freedom of mind to apply themselves to that work, I relieved them from the routine of workhouse inspection by giving them assistant inspectors. It is this assistant inspector who has been magnified into the sanitary inspector who is to have under his supervision the sanitary wants of the country. Now, I have not appointed a sanitary inspector at all; but I have simply appointed assistant inspectors, so that the inspectors themselves may be left free to negotiate the initiation of this new Act. I am perfectly aware that this is not all the problem. There are occasions upon which we must have the inspection of the medical officer. There are branches in the business of inspection which must be conducted under medical experience. You know the fitness of the gentleman who presides over the Medical Department of the Government. I have not asked him here to-day, because I thought it would be better that we should discuss these questions in his absence; but I believe that the whole profession recognises the value of the appointments which have been made under his recommendation. He and his colleagues and subordinates are considering the proposals which they will deem it their duty to make to me with reference to what shall be their place in this new machinery. When I get these proposals, I shall consider them and endeavour to appreciate and understand them; but I shall endeavour to arrive at that conclusion which on the whole appears to me fitting at that time, because I do not think any one can pretend at this moment to impress a permanent and absolutely unchangeable form upon the whole imperial, local, and sanitary administration of this country."

It is not possible to understand how a man of Mr. Stansfeld's political standing and experience could utter the fallacies contained in this extraordinary statement of policy, except on the supposition that he approached the subject solely from the point of view of Poor Law tradition and practice. The remarkable "shunting" of the former Health Department of the Government, now the Medical Department of the Local Government Board, from all part in the initiation of the Public Health Act, 1872, and the statement that the position of this department, the repository of all the previous experience of the Government in health matters, had not then (and, indeed, we believe has not yet) been determined even in the organization of the Local Government Board, is only explicable on the foregoing supposition. The assumption runs throughout the whole statement that nothing before him was known of the principles upon which sanitary organization has to be based; and that it is a self-evident truth, that no special knowledge of sanitary medicine or of the subject-matter of the Public Health Act, 1872, is necessary for the officers entrusted with the initiation of the Act. The "experience" which served the poor-law inspectors so well in their conferences with guardians on out-door relief, was a technical knowledge of the subject to be dealt with. This experience was shared by the guardians conferred with. These gentlemen have no like "experience" to serve them in their conferences with sanitary authorities on sanitary organization and administration; the sanitary authorities are for the most part in the same position; and the only "experience" available for the Local Government Board in these matters, that of the Medical Department of the Board, has been deliberately foregone. The results are such as might have been foreseen, where a number of gentlemen were set at large to educe sanitary principles and practice out of their own consciousness. The regulations of the Local Government Board as to the duties of medical officers of health and inspectors of nuisances are simply misleading, unless interpreted by persons having practical knowledge of the duties of such officers and inspectors, or unless supplemented by instructions as to their statutory bearing and practical execution. If the poor-law inspectors had been definitely instructed to reduce the sanitary organization contemplated by the Public

Health Act, 1872, to confusion, the results of their labours to the present time could not have been more deplorable. Here one inspector advises the appointment of the poor-law medical officers as medical officers of health each in his own district, and an inspector of nuisances for a union of several such districts; and the Local Government Board confirms the arrangement. There an inspector discourages the appointment of poor-law medical officers as officers of health, and urges that a county or a combination of several unions should be formed into a medical officer of health's district, and that an inspector of nuisances should be appointed for each union; and the Local Government Board confirms this arrangement also. Elsewhere an inspector propounds a scheme in which a medical officer of health and inspector of nuisances are to be appointed for a large area, with the poor-law medical officers and relieving officers acting as assistant officers of health and assistant inspectors of nuisances; and this scheme also is approved by the Local Government Board. The latest instance of the large-area mania is a scheme advertised in the *Local Government Chronicle* of 29th March, in which it is gravely proposed to elect a medical officer of health for a district having an area of above a thousand square miles, and a population of over a quarter of a million! Now, Mr. Stansfeld, in the statement to which reference has been made, said of the Public Health Act, 1872, that it imposed upon the sanitary authorities created by it in every locality "the duty of a minute inspection of premises in order to prevent nuisances, and there in his mind arose its great future work." And yet, without exception, the arrangements made or proposed to be made through the arrangements of the poor-law inspectors were under such inspection as is here contemplated impossible. We have, in fact, the strange spectacle of the poor-law inspectors not only differing entirely from each other in the essential matters of their recommendations, but differing fundamentally from the general principle enunciated by their President! There are no differences of districts to explain this discordancy of advice; the discordancy arises solely from the fact that the Local Government Board in initiating the Public Health Act, 1872, has chosen altogether to ignore previous experience in the subject-matter of the Act. Need

we wonder that numerous sanitary authorities, bewildered by these advisers, have thrown them over, and, having no guide to the right course to take, have committed numerous follies on their own account?

All this, absurd though it may be from ordinary points of view, is the natural result of poor-law tradition and practice in sanitary matters; and the tendency of the policy of the Local Government Board thus regarded is easily seen. That tendency is to bring the whole public sanitary work of the kingdom into the same kind of relations with the Board and its general inspectors, that the sanitary work of workhouses and workhouse schools had with the Poor Law Board and the poor-law inspectors. For sanitary, as well as for general purposes, the old poor-law inspectors held a like position between the guardians of the poor and the Local Government Board that it is now proposed to give them between the sanitary authorities and the Local Government Board, and the result was, as is well known, a constant series of the gravest sanitary scandals in workhouses and schools. The disclosures of the *Lancet Sanitary Commission* on the disgraceful sanitary condition of workhouses may be referred to in illustration. How inseparable such scandals are from the kind of inspection adopted by the Poor Law Board, the kind that it is now proposed to extend to all sanitary matters in the kingdom, is shown by the late extension and present prevalence of purulent ophthalmia in the metropolitan workhouse schools. That such prevalence should be possible is the greatest condemnation that could be expressed of the inspectorial system of the Poor Law Board; and it may by itself be taken as a significant indication of what is certain to follow upon the extension of this system to the general sanitary work of the kingdom.

The Local Government Board, following the practice of the Poor Law Board, is then, it seems, about to place its Medical Department, with its distinguished head, in the background for discretionary use by the Board and its general inspectors. The position to be assigned to that department, according to Mr. Stansfeld, is not that which it had previously held, of helping in all public sanitary work in accordance with the most advanced teachings of medical science; but the more restricted duty of

advising upon outbreaks of diseases when they occur. In fact the Local Government Board has adopted the vulgar fallacies that the preservation of health is not the prevention of disease, and that common intelligence is alone needed for sanitary work where actual disease is not in question. The Royal Sanitary Commission, in regard to Mr. Simon's severance from the Privy Council Office, contemplated his "concentrated superintendence of all public sanitary arrangements, whether those of local boards of guardians or of any other local authorities," with a view to "adding greatly to his usefulness and power." Mr. Stansfeld has substituted for this skilled superintendence the individual action of a host of amateurs, including even (strange though it may seem after Mr. Stansfeld's statement) the assistant inspectors!

It was the work of amateurs on questions concerning technical sanitary medicine which more than anything else led to the downfall of the General Board of Health; and the Local Government Board is courting a like fate. Neither sanitary authorities nor the public will long be content with unskilled central advice in health matters when skilled advice is within reach. The questions at issue are of greater magnitude than those involved in workhouse management. To the present moment the means taken by the Local Government Board for the initiation of the Public Health Act, 1872, have led to nothing but confusion, and the Board, so far from having shown itself to be a board of local government, is proving itself to be a *Board of Local Anarchy*.

THE HEALTH ASPECTS OF SEWAGE IRRIGATION.¹

THE influence of land irrigated with sewage upon health is still a debated question. On the one side it is averred that sewage irrigation rightly conducted is not inimical to the health either of the persons engaged in the work of irrigation, or of persons living near the irrigated land. On the other side it is asserted that sewage irrigation as commonly conducted is a source of serious nuisance, that even with the greatest care it is impossible at all times to avoid nuisance, that such nuisance has led more than once to serious outbreaks of disease, and that, finally, sewage irrigation whether well or ill conducted must promote in a marked way parasitic diseases. To this it is responded that nuisance the result of carelessness is no sufficient argument against sewage irrigation, as it may be avoided; that outbreaks of disease resulting from such nuisance have been of the rarest, and could not have occurred but from the neglect of necessary conditions for rightly carrying out the process; that nuisance need never occur in properly prepared land under proper supervision; and that there is not a tittle of evidence to show that sewage irrigation will especially foster parasitic diseases. Indeed, it is further argued that, owing to the large production of ozone by rapidly growing vegetation, such as is formed on sewage-irrigated land, sewage irrigation may be, and probably is, absolutely beneficial to the health of persons within its influence. Pushed to a logical conclusion, sewage irrigation, according to one set of opinions, would, from the generation of ozone by

¹ "Report on Enteric Fever at Ecton, and on its Relations with the Sewage of Northampton." By G. Buchanan, M.D., Assistant Medical Officer for General Sanitary Purposes of the Local Government Board.

the rich vegetation of the irrigated land, be a boon to the metropolis and large towns if carried out in the squares and open spaces within them; while, according to the other set of opinions, it would add even another horror to the second Gulf of Malebolge.

The truth is that there is a deficiency of precise knowledge on the question at issue. Sewage irrigation as a rule has been carried out in localities where much harm could not arise from it at the worst. Again, it has always been a canon of sewage irrigation here that the irrigated lands should be situated in as sparsely populated places as practicable, or removed entirely from inhabited localities. The evidence pointing to little or no unwholesomeness from sewage irrigation in this country has been necessarily largely obtained from sewage-irrigated lands so circumstanced; and although abundantly sufficient to justify sewage irrigation *when thus carried out away from centres of population*, it does not prove more than this. The paucity of evidence one way or the other is shown by the limited number of facts which can be adduced, by their constant repetition, and by the few and insignificant additions which have been made to them of late years.¹ The discussion, indeed, has assumed very largely a party character, as our remarks would indicate, and the imagination has been exercised upon it proportionately to the insufficiency of the evidence. The whole subject requires, indeed, to be examined anew as an independent public health question, and not, as hitherto, a mere incidental matter connected with the engineering and farming phases of sewage irrigation. This is a kind of work which the Medical Department of the Local Government Board is peculiarly well fitted to carry out, and which could be done by it in a manner that would secure fully the confidence of the profession and of the public. That the importance of the questions at issue have not escaped the attention of the Department is manifest from a report now before us, by Dr. Buchanan, on an outbreak of fever supposed

¹ In Dr. Corfield's treatise on the "Utilization of Sewage," the summary of evidence tending to show that sewage-irrigation is not a source of disease is singularly meagre, and does not extend beyond the stock facts from the irrigated meadows at Milan, Edinburgh, Norwood, Worthing, and Colney Hatch.

to have been connected with the Northampton sewage meadows. This report furnishes important additional evidence to the effect, first, that no unwholesomeness appears to attach to labour on sewage-irrigated land ; and, secondly, that there is an occasional source of danger to health from such land which needs to be carefully guarded against—namely, the danger of water in the outflow channel of the irrigated land, when an open channel, being mistaken for ordinary brook water and used for drinking.

Dr. Buchanan's story is as follows :—The sewage of Northampton is carried to a plot of ground 320 acres in extent and four miles from the town, in the valley of the Nene. One-half of this plot (the western), had been prepared for irrigation at the beginning of July last ; the other half (the eastern) had not then been touched. Adjoining the last-named half is a field, occupied by a Mr. Pell, through which the outflow channel, an open ditch, of the irrigated land passes, and which plays an important part in the story. A mile away from the sewage meadows, on the higher ground, is the village of Ecton. In the middle of July, a labourer on the meadows, named Hensman, aged 22 years, living in the village, was unable to work for a week from loss of appetite and diarrhoea. Towards the end of August, a sister of this man, who had never visited the sewage meadows, was attacked with enteric fever apparently contracted in Nottingham. These cases were isolated ones. The next cases to be recorded form a group to which belongs the chief interest of the story. On the 13th July a boy, Dennis Gray, working in Mr. Pell's field at hay-making, which had commenced the 1st July, fell ill of enteric fever. On the 23rd July this boy's father sickened of the same disease. A fortnight after this a woman who came to nurse the older Gray was also seized, and subsequently her two children. Then the disease spread to the neighbouring cottages, seemingly through the infected common privy, and probably also a fouled well, attacking several other people. In addition to this group of cases of manifest enteric fever, there was a group of cases of doubtful character, diarrhoea being the prominent symptom.

On the 7th July, a man (Ralph) working in Mr. Pell's field was seized with diarrhoea ; on the 9th this man's son was also

attacked; and the next day Mr. Pell himself was taken ill with diarrhœa, irritation in the throat, and a good deal of fever which lasted a fortnight. Now the Grays, Ralph and his son, and Mr. Pell had all, certainly or presumably, slaked their thirst during hay-making with water from the outflow channel, or as they looked upon it "the brook," running through the field. What the water in this "brook" at this time was we have to learn. Sewage was first passed on the land prepared for it on the 1st July, the day when hay-making commenced in Mr. Pell's meadows, but none of the effluent water passed into the outflow channel, it is believed, until the 6th July. On this day there was heavy rainfall, and raw sewage was no doubt washed into the outflow channel, and for several days imperfectly depurated sewage no doubt passed into it from the sodden land. But there was another source from which raw sewage found its way into the outflow channel in the first week of July. During the last week in June the low lands had been flooded from the Nene, which received some two miles higher up the whole of the Northampton sewage, at all times containing the excrement of patients suffering from enteric fever. During the first week of July the outflow channel was largely acting as a drain from the neighbouring flooded land, and carrying off the mixed flood-water and sewage. The facts of the Ecton occurrences were, therefore, to use Dr. Buchanan's words, as follows:—

"In the early days of July last, ten people are working on a meadow through which runs a brook containing Northampton sewage, of which a part is formed by the excrement of patients with enteric fever. Some at least of the ten people employed in this meadow drink of the brook, in ignorance of the nature of its contents. Almost all the workers become sick. Two of them, who cannot be followed up, get 'diarrhœa;' a third gets a protracted diarrhœa which bears resemblance to that of enteric fever; a fourth and fifth (the Grays) get distinct enteric fever, one of them ten days after the other. Of the Grays, first one, and then the other, goes home and infects the common privy, and, doubtless, the well of the yard in which their house stands. Other people living in that yard, themselves having nothing to do with Northampton sewage, begin to sicken with enteric fever two or three weeks after this introduction of the disease among

them, and fall ill one after the other of the same fever, until fourteen out of the eighteen residents there have been attacked. Meanwhile, among the other 600 odd residents in the village, there is no case of fever except the solitary one of the girl Hensman. On the other hand, out of 120 people at work upon the sewage farm itself there is no single case that can be affirmed to be fever, and the only case of illness that can be heard of, is the diarrhoea in the boy Hensman. In this history, there is seen to be reason for serious regret that the danger of the brook being drunk from in July was not recognised, and that measures were not taken for warning people not to use it for this purpose. But in this history there is nothing to tell of mischief done by the sewage farm itself, even to persons who were themselves employed on the farm under exceptionally favourable conditions for breathing exhalations from the sewage."

THE PROPAGATION OF ENTERIC FEVER BY THE MILKMAN.¹

WHEN, about two years ago, Dr. Ballard, then the Medical Officer for Islington, showed, in a localized outbreak of enteric fever which occurred in his district, that the disease had almost certainly been propagated by a milkman, and through the agency of milk polluted with enteric fever poison, he supplied the probable explanation of not a few localized occurrences of the disease, previously inexplicable. It is, nevertheless, somewhat remarkable that to the present time the Islington outbreak has remained alone as an illustration of this mode of the propagation of enteric fever. Now, however, we have a group of instances, all confirming, to a greater or less extent, the conclusions which Dr. Ballard derived from the Islington case. First, we have an outbreak owing the milkman as a cause at Armley, near Leeds, reported by Dr. Ballard himself. Next, there is an instance in Leeds, recorded by Dr. Robinson, the Medical Officer of Health of the borough. Then there is a recent example, reported by Dr. Russel, the Medical Officer of Health for Glasgow. Finally, there is an instance reported from East Molesey, a suburb of Birmingham, which Dr. Ballard has been deputed to make inquiry concerning, by the Local Government Board. In the present notice we shall confine our attention to Dr. Ballard's report on the Armley example, as that which is the most complete of the different reports on outbreaks of this character which have yet appeared.

¹ "Report on an Outbreak of Enteric Fever at Armley, in the Borough of Leeds." By Edward Ballard, M.D., Medical Inspector of the Local Government Board.—"Report on the Sanitary Condition of Leeds, for the Year 1872." By M. K. Robinson, M.D., Medical Officer of Health.

Armley is a suburb of Leeds, and it is scarcely ever free from enteric fever. Up to the end of April 1872 two deaths from the disease had occurred in the village, and, so far as could be ascertained, two other cases only. From the end of this month to the end of the first week of September, the following cases of deaths from enteric fever took place from week to week :—

1872 Week ending	New Cases coming under observation.	Houses newly invaded.
May 18	2 (1 fatal)	2
„ 25	—	—
June 1	—	—
„ 8	—	—
„ 15	—	—
„ 22	1 (fatal)	1
„ 29	1	—
July 6	14 (3 fatal)	12
„ 13	22 (2 fatal)	11
„ 20	19 (2 fatal)	10
„ 27	24 (2 fatal)	16
Aug. 3	5	2
„ 10	5	5
„ 17	2	2
„ 24	4	3
„ 31	2	1
Sept. 7	1	1
Dates not ascertained	5	2
TOTAL	107	68

The houses attacked were not scattered over all parts of the village, but were confined to a particular part containing 449 houses, including dwellings of the well-to-do inhabitants as well as cottages of the poorer classes. The epidemic commenced suddenly and almost as suddenly abated. Of the twelve houses invaded in the first week of the epidemic, ending July 6, there were only two in which a solitary case occurred. In each of the remaining ten houses from two to six cases happened in succession. In the second week of the epidemic, out of eleven houses newly invaded there were but three in which solitary cases of the disease were observed. From the third week onwards the reverse was noticed. Out of ten houses newly invaded in the third week, multiple cases were observed in two, while, in the fourth week, solitary cases only occurred in each of the sixteen invaded. All subsequent invasions of houses were represented by solitary cases of fever. Of the 107 cases,

55 were males, and 52 females. The attacks were met with in persons of all ages up to 65 years, but most of the children (numbering 10 under five years of age) were attacked at a comparatively late period of the epidemic. "Whatever the cause of the outbreak may have been," writes Dr. Ballard, "the older persons, on the whole, were attacked earlier than the younger, who either resisted more strongly the operation of the cause, or exhibited a longer period of incubation." There were defective conditions of drainage, very likely to favour the development of enteric fever in the village, but these were common to the whole village and not to the part only which was the scene of the outbreak. The medical man who had charge of most of the earlier cases, Mr. Coleman, was early impressed with the idea that the distribution of milk from a particular source had something to do with the outbreak. Every family attacked up to the end of the first week in July, dealt with a dairyman who had suffered from enteric fever in May, and first came under Mr. Coleman's observation on the 17th of that month; so did every family, with the exception of one, invaded in the second week of July; so did every family invaded in the third week of July. After this there was less uniformity in the milk supply of the houses invaded. In the fourth week of July, out of 16 families newly invaded, ten dealt with this dairyman, while the remaining six distributed their custom among other milk-sellers. The remaining 16 families invaded subsequently, or at dates not precisely ascertained (but certainly late in the epidemic), dealt for milk as follows: viz. 7 with the dairyman in question, 7 with three other milk-sellers, while in respect of two the source of milk supply was not discoverable. Dr. Ballard's inquiry further showed, that of the 68 houses attacked, 51, including that of the milk-seller, were supplied with milk by the dairyman in question; 13 were supplied by various other milk-sellers whose names were known; one had no milk from anybody, and the source of milk supply to three was doubtful or unknown. It might have turned out that the proportion of all the houses supplied by the suspected dairyman was no greater than the proportion of all the houses which he supplied with milk in the district. But a house-to-house inquiry proved that although he actually supplied a large number of houses, he did not supply

anything like 51·68ths of them. Of the 449 houses in the defined district, 132 were supplied by the dairyman who had been ill, and 317 obtained their supply from 18 other milk-sellers. Altogether 37·8 per cent. of the families the dairyman in question supplied with milk, after he himself had been attacked with enteric fever, were invaded by the same disease, while only about 5·3 per cent. of the families supplied by other milk-sellers, or not taking milk at all, suffered from the fever. As to the 17 families who suffered, not having milk from this source, with one exception, all occurred during the fourth week of the outbreak and in subsequent weeks, and probably were from the ordinary mode of propagation of the disease through infected privies, drains, and soil. The inquiry also showed that the fever picked out the customers of the dairyman in various rows and blocks of houses in a remarkable way; and also that the largest consumers of the infected milk were amongst the earliest, and the smallest consumers among the latest attacked.

The dairyman whose milk was infected came under observation during the third week of May. The discharges which passed from him in his sickness would be thrown partly into a privy, partly into a blocked drain, and partly into a dung-pit on his filthily kept premises, all of which receptacles were in near contiguity to the surface-well from which the water for dairy purposes was obtained. The first and second weeks of May were dry; during the second and third weeks much rain fell, and during those weeks foul matters from the privy, dung-pit, and fouled surface would be washed into the soil and percolate into the well. Leakage from the fouled porous soil into the well was proved during the inquiry. The first week in July the outbreak began, that is to say, after the ordinary period of incubation of the disease, assuming that the polluted water of the well was the chief agent in the subsequent events. On July 10th Dr. Robinson, the Medical Officer of Health for Leeds, had the handle of the pump removed; on July 27th occurred the sudden cessation of the disease, which means, that the cause of the epidemic had ceased a fortnight or more previously.

This lucid and elaborate report appears to us conclusive as to the occasional propagation of enteric fever by the milkman. The moral of the story is best given in Dr. Ballard's words:

"The Adulteration of Food Act of last session enables local authorities to deal with persons who add water to milk ; but if a dairyman's own drinking water is permitted by local authorities to be a fluid little better than sewage, is it not rather a reflection on those authorities than an aggravation of his commercial fraud, that he, only meaning to dilute his milk, ignorantly supplies infection to his customers?"

INTERNATIONAL HYGIENE.—THE PROTECTION OF EUROPE FROM CHOLERA AND PLAGUE¹

TOWARDS the close of 1870 an outbreak of plague occurred in that portion of Persian Kurdistan which lies to the south of Lake Urumiah, between the rivers Jagathu and Tatawa. This district is wild and mountainous, inhabited by fierce pastoral tribes, and except cartographically to scholars, who have traced across it the route of Alexander the Great on his way to Northern Ecbatana, it is little known. The outbreak of plague, although confined within a comparatively small area, was very fatal. It followed close upon the great drought which led to the horrible famine of 1871-2 in Persia, but the infected districts appear to have suffered little, if at all, from that calamity. It was accompanied by a fatal epizootic among sheep and cattle, or these evils preceded it; and ergotism had been more or less prevalent before plague showed itself. Astounding filthiness of domestic surroundings is the normal condition of Kurdish homes; but it is noted that the infected villages were not formed, as common in Kurdistan, of houses grouped against each other, but that for the most part the houses in this district stand well apart, and are situated on high ground. Some of the earliest infected places, however, were situated amidst marshy rice-fields. The determining cause of the out-

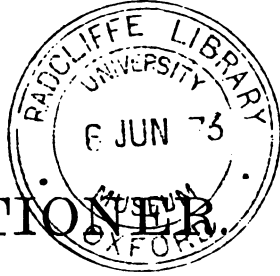
¹ "La Peste dans le Kurdistan Persan." Par le Dr. Castaldi, Médecin Sanitaire Ottoman à Téhéran. Constantinople, 1871.

"Rapport sur les Mesures à prendre contre la Peste qui sevit en Perse." Par le Dr. Bartoletti, Inspecteur-Général du Conseil Supérieur de Santé (Ottoman). Constantinople, 1871.

"Report on the recent Diffusion of Cholera in Europe." By J. Netten Radcliffe. Parliamentary Paper, 1872.

"The Plague." *The Times*, Jan. 1, 1873.

break is a mystery, but a Transcaucasian physician, who visited the locality, avers that it followed upon the opening of an old plague-pit, in which the dead of the great plague that visited the district forty years ago had been buried. The evidence of this is, however, of the weakest. The plague extended to the frontier town of Bana, and seriously alarmed the Turkish Government for the safety of its provinces in Asia Minor. Actuated by this alarm, the Sublime Porte has appealed to other European Powers to unite with it in obtaining more effectual co-operation from Persia in securing the frontier from the invasion of the pestilence, and to obtain fuller knowledge of the internal sanitary state of Persia. It is understood that a mixed Sanitary Commission will be appointed by the different Powers, with the concurrence of Persia, and that to this Commission will be submitted, at the suggestion of England, in addition to the question of plague, the further question of the possible danger to Europe of the introduction of cholera by the quicker and more direct route of traffic opened between Persia and Russia through Transcaucasia to Poti, and thence by steamer to the ports on the Black Sea—a route to which attention was first directed by Mr. Netten Radcliffe last year, in connection with the outbreak of cholera in South Russia in 1869. Whatever the practical result of the Commission's work may be, we may look at least for its bringing to light much important information of the little known movements of cholera in Transcaucasia and Northern Persia, and of plague in Persia.



THE PRACTITIONER.

JUNE, 1873.

Original Communications.

CASE OF TRIGEMINAL NEURALGIA TREATED WITH THE CONSTANT CURRENT.

BY SAMUEL CRADDOCK, F.R.C.S., SHEPTON MALLET.

J. S., aged 64, decidedly neurotic, and of neurotic parentage, on September 5, 1872, was seized somewhat suddenly with severe neuralgia of the left fifth nerve. The branches affected were as follows:—

1. Ophthalmic division:—

(a) Frontal.

(b) Lachrymal.

(c) Nasal $\left\{ \begin{array}{l} \alpha \text{ Internal branch.} \\ \beta \text{ External ditto.} \\ \gamma \text{ Long ciliary branches.} \\ \delta \text{ Branches to iris.} \end{array} \right.$

2. Superior Maxillary division:—

(a) Orbital $\left\{ \begin{array}{l} \alpha \text{ Temporal branch.} \\ \beta \text{ Malar branch.} \end{array} \right.$

The foci of pain were situated over the malar bone and at the junction of the nasal cartilage and nasal bone; also one on the brow, over the supra-orbital foramen.

The immediate exciting cause of this attack appeared to be that the patient had stood at an open window during some damp weather that was prevailing at the time. This gentleman had been the subject of severe albuminuria of long standing; it had in fact existed for many years, but there was no evidence of breaking down of the kidney-structure. At the time of the attack the urine was, moreover, very acid, and contained many uric acid crystals; sp. gr. 1025.

The treatment at first consisted in warm fomentations to the face, and the internal administrations of alkalies with mild alterative aperients: after a few days he seemed to improve, and the medicine was changed for a mixture containing iron, arsenic, and nux vomica. On October the 26th he went to town and consulted his London physician, who regarded the attack as due to the gouty diathesis, and put him, anew, upon alkaline treatment. The patient returned to the country on November 19 very much worse; in fact, I never saw anyone suffer so severely from neuralgia. The lachrymation from the left eye was excessive, and there was a copious flux from the left nostril; the nostril was so exquisitely tender that he could not bear to use his pocket-handkerchief. He complained also of severe shooting pains passing through the interior of the eye. These symptoms steadily increased in severity, and the branches of the posterior dental nerve, which are distributed to the gums, became affected, as well as the middle dental branches of the supra-orbital: this was indicated by pain referred to the site of the antrum. All the cutaneous branches of the superior maxillary were now alive with pain, and another focus was developed in the upper lip. The sensory part of the inferior maxillary, distributed to the lower lip, followed suit; and at last, so far as one could see, every branch of the sensory portion of the left trigeminus was more or less affected. The patient became perfectly unable to eat anything at all solid, and lived for two months entirely upon liquids: even these he was only able to take through a reed or a glass tube. It is scarcely necessary to enumerate the long list of remedies which were employed; they included the hypodermic injection of morphia and atropia, but the patient could not tolerate these, and the hypodermic method consequently did not obtain a fair and complete trial. The first

remedy that gave any appreciable relief was the external application of aconite liniment, which was done morning and evening, and certainly mitigated the pain: meanwhile, however, the lachrymation and the defluxion from the nose continued in full force, as also the tenderness of the parts. Early in February 1873 I applied the constant current, employing a 50-celled Weiss's battery. The current was derived from eight cells, and was applied for a period of five minutes at each sitting. The positive pole was placed at the back of the neck, and the negative applied successively to the several foci of pain, being kept steadily on each for a minute or more. This was done daily, at the same hour; after the third application the lachrymation had nearly ceased, and the patient was able to blow his nose freely. From this time the improvement was continuous; mastication was performed easily, and at the end of a fortnight the cure was complete. The patient could not avoid perceiving the remarkable influence of the galvanism, and spoke of it, with the greatest delight, as a "perfect cure." My own satisfaction was equally great, as I had previously, from inexperience of its use, been inclined to doubt the efficacy of the constant current. This case certainly speaks strongly in favour of this method of treating neuralgia, and incidentally supports the pathological theory of neuralgia advocated by Dr. Anstie in his work on that disease.

[The above case interests me greatly: I regard it as a typical example of the mistakes that frequently result from the time-honoured doctrine that neuralgia is usually produced by the gouty diathesis. So long as that theory was acted upon in this case, no really effective steps were taken towards the arrest of the disease, and a very little more continuance in the same course would not improbably have rendered the malady incurable, considering the patient's advanced age. I understand from Mr. Craddock, that there was really no positive reason for supposing that this patient had gout in him: and certainly the mere presence of an excess of uric acid in the urine is no justification for such an assumption. The first remedy that made any impression was the linimentum aconiti, a local application which can only have acted in one way, viz.

by temporarily paralysing the peripheral portions of the nerve, and thus blocking the channels by which impressions from without were pouring in upon the irritated nerve-centre. Aconite belongs to a small class of remedies which are often of great service in procuring a momentary pause, during which neuralgic nerves have time to recover their equilibrium a little, while more radical curative measures can be devised.

As regards the action of the constant current, there can be no reasonable doubt that this was genuinely effective, and I beg to call attention to the fact that the direction of the current was what is called "inverse," viz. from centre to periphery. This is contrary to the method strongly advocated by many writers on medical electricity: but the result corresponds with that of inverse galvanisation as seen in several cases under my own treatment. I may especially advert to the case of a footman (described in my book on Neuralgia) in whom an exceedingly severe facial neuralgia of the first and second divisions of the fifth was found to be perfectly under the control of the constant current, and the effects of inverse and of direct galvanisation were found to be practically identical. I take this opportunity of remarking that evidence is fast accumulating which tends to show that the older ideas as regards the influence of the direction of the current must have been to a large extent erroneous. The opinion of Dr. Reynolds and of Dr. Buzzard coincides with my own upon this matter, and has been arrived at, equally with my own, by sheer experience, in the face of unavoidable prepossessions in favour of the usual ideas as to the respective effects of the two currents.—F. E. ANSTIE.]

"WRITER'S CRAMP:" ITS PATHOLOGY AND TREATMENT.

BY G. V. POORE, M.D.,

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PART I.

By "Writer's Cramp," the name in most common use in English medical literature, I mean that disease which is thus defined by Dr. Reynolds¹ in his "System of Medicine:"—"A chronic disease characterised by the occurrence of spasm when the attempt is made to execute a special and complicated movement, the result of previous education; such spasm not following muscular actions of the affected part when the special movement is not required."

The disease has been cleverly though shortly described by Duchenne² in his work on Localised Electrification. He classes two varieties of the disease together, and speaks of "Functional muscular impotence and spasm." He says that muscular functions frequently repeated occasionally give rise to temporary spasm or impotence of one or many of the muscles which concur for the executing of these functions. Functional spasm is characterised ordinarily by tonic contractions, at other times by tremblings or clonic contractions. It disappears with the suspension of the muscular function which has provoked it. It is sometimes painless, but often painful. This kind of spasm or impotence is not limited to the hand, and has been observed

¹ Reynolds' "System of Medicine," 1st edit. vol. ii., art. "Writer's Cramp."

² "De l'Electrisation Localisée," 3rd edit., pp. 10-21 et seq.

not only in scriveners, but also in pianists, tailors, cobblers, fencing-masters, &c.

The disease, though a rare one, is tolerably familiar to most practitioners in its most common form of Writer's Cramp or Scrivener's Palsy, and the puzzling spectacle of a man who is able to execute every kind of complicated and delicate movement, *save one* (for which exception there is no obvious cause), has given rise to much speculation as to the pathology of the disease.

Duchenne¹ is of opinion, and mainly it would seem because the disease is uninfluenced by localised faradisation, that functional spasm or impotence is due to a lesion of some point of the *nervous centres*. He is confirmed in this opinion because the left hand, in cases of writer's cramp, is as liable to suffer (should it be used for writing) as was the right one. "Do not these facts," he says, "tend to show that voluntary stimulation, often repeated by such and such functions, has not only produced at length a morbid condition in a given point of the spinal cord, but that it has extended its action to a neighbouring point on the opposite side?"

He says, further: "One must also admit for the development of his malady, as for all others, a particular predisposition. In point of fact, numbers of people abuse the functions of writing without being afflicted by writer's cramp."

The late Mr. Solly² was of opinion that the cause of writer's cramp was a granular disintegration of the cervical portion of the spinal cord.

Dr. Reynolds,³ after pointing out that for the production of a complicated movement, such as writing, the integrity of a great number of parts is necessary—the will, motor and sensory nerve-fibres, certain ganglia situate upon the nerve-trunks, the cerebellum, the muscles, and the special senses—goes on to say that in the disease in question "it cannot be doubted that some changes take place in the nutrition of the parts through which the lines of nerve action, regulating the secondarily automatic movements, run. It seems probable that the association of

¹ "De l'Electrisation Localisée," 3rd edit., pp. 10–21 et seq.

² *Lancet*, vol. i. 1865.

³ Reynolds' "System of Medicine," 1st edit. vol. ii., art. "Writer's Cramp."

movement is effected by ganglia, which are common to fibres passing through distinct but contiguous nerve-trunks, and that it is owing to some nutrition-change in them—the result of persevering and forced effort—that the perfection of movement is produced; associations at first caused by the will are at length produced unconsciously. What happens, then, in such maladies as writer's cramp is a perverted nutrition of these parts; a worn-out activity, or a degeneration which may arise without over-exertion and destroy all that has been previously achieved."

Dr. Julius Althaus¹ is "inclined to look upon scrivener's palsy as a symptom of fatigue and functional irritability of the co-ordinative centres in the upper portion of the spinal axis which have by education been trained for the guidance of the mechanical act of writing."

Professor Niemeyer² remarks that "we know nothing positive as to the pathogeny of the disease."

Dr. Crisanto Zuradelli,³ of Pavia, who has published two valuable papers, "*Del Crampo degli Scrittori*," holds that "these perversions of function are not true spasms, but are due to paralysis of one or other of the muscles used in writing, in consequence of which the antagonising muscles get the mastery and occasion a spurious cramp." He points out that the paralyzes present are not paralyzes in the ordinary sense of the word, but are comparable to that condition which other physicians have alluded to as "*irritable weaknesses*." He shows that writing consists of *three* separate acts: (1) the stroke-making movement of the pen; (2) the movements of the hand from left to right; and (3) the movements which take the hand to the ink-pot: and when any one of the muscles, by which one or other of these movements is effected, becomes the seat of paralysis or irritable weakness, we get a variety of "Writer's Cramp." In the chief form the weakness lies in the thumb and fingers; but he remarks that the paralysis sometimes spreads to muscles which are not used in writing, and that in progressive cases the muscles are

¹ "Scrivener's Palsy." A Pamphlet. 1870.

² "Text-book of Practical Medicine." (Eng. Trans.) Vol. ii. p. 320.

³ "Gazz. Med. Ital. Lombardia," No. 36-42, 1857; and "Annali Universali," 1864.

affected in the following order: hand, fore-arm, arm, shoulder. The affected muscles have diminished tonicity and electric irritability, and their employment causes intense feeling of fatigue. Dr. Zuradelli says that scarcely any two cases of writer's cramp resemble each other, a remark the truth of which all who have seen much of the disease will confirm.

Geigel,¹ Haupt,² and Meyer³ have all published papers on writer's cramp which go to confirm the theories put forward by Zuradelli.

The foregoing theories are divisible into two classes. In the first class, the lesion causing writer's cramp is referred to the nervous centres; in the second class, the parts at fault are alleged to be the muscles themselves.

Assuming the first class of theories to be correct, one cannot help asking this question:—Supposing a man with uncomplicated writer's cramp to be killed suddenly by an accident, where would one expect to find the exact anatomical seat of the morbid changes? The number of automatic and secondarily automatic complicated movements of which we are capable must be almost innumerable (only limited possibly by the commutations and permutations of which the whole number of human muscles is capable), and the educated regulating centres of such movements must be innumerable also. Of all the secondarily automatic complicated movements which we are capable of acquiring, the one which is most commonly affected by the disease in question is that of *writing*. Among the whole range of functional spasms and functional palsies, writer's cramp takes the pre-eminence. Its occurrence is infinitely more common than that of *sempstress's cramp*, *milker's cramp*, *cobbler's cramp*, and the other rare varieties which have been occasionally described, notwithstanding the fact that the number of sempstresses, milkmaids, tailors, and cobblers cannot be very far short of the number of seriveners. There are numbers of secondarily automatic acquired complicated movements—such, for instance, as dancing

¹ "Der Schreibekrampf und die functionellen Krämpfe und Lähmungen." Würzburg. Med. Zeitschrift, 1864.

² "Ueber den Schreibekrampf," &c. Wiesbaden, 1860.

³ "Zur Therapie des Schreibekrampfes;" Verhandlung der Berliner ärztliche Gesellschaft, 1868.

—which are never, as far as I know, overcome or rendered impossible by the occurrence of functional spasm or impotence, notwithstanding that each of these movements has presumably its regulating centre, which is as capable of degeneration and morbid change as is that regulating centre which controls the act of writing. The bearing of the immediately preceding remarks will be made apparent later on.

The facts stated by Dr. Zuradelli are undoubtedly true, and are in a great measure borne out by my own experience. Since the publication in the *Practitioner* of September last, of a case of writer's cramp, &c., I have enjoyed opportunities of closely examining other cases which have been under my care, and have arrived at a theory as to the nature of the disease which I hope is consistent with anatomy, physiology, and common sense.

All who have any knowledge of this disease are aware that although the word *cramp* has been applied to it, yet actual cramps or spasms of any of the muscles concerned are often not evident even on the most careful examination; and that although the word *palsy* has been used, yet actual paralysis of any nerve, muscle, or group of muscles, is only present as an occasional complication, and when present generally warrants us in placing the case in a category other than that of functional spasms. The person affected with *writer's cramp* in its fully developed form is able to make scarcely a line upon paper; directly he attempts to do so the fingers and thumb, one or other, become obstinate, and move in an irregular unsettled manner, the result of which is that the pen is often twisted out of the hand, and the closest scrutiny of the hand and arm will often not enable us to say why. There is an "impotence," as Duchenne says, to write; and this word, which commits us to no theory either of spasm or paralysis, seems to me to be the best. Another important fact about writer's cramp is the progressive nature of the disease. At first the fingers alone may be affected, and the patient adopts some new mode of holding his pen which relieves him for a time; then possibly the whole hand becomes as obstinate as were his fingers, and ultimately the patient is obliged to resort to some mechanical means of fixing the pen to the wrist or fore-arm—a plan which may serve

him for a time, but sooner or later (if he persevere in writing) the muscles of the fore-arm, arm, and shoulder become as obstinate and troublesome as were those of the fingers in the first instance. In fact, the disease might be called "*Progressive Functional Ataxy*."

Professor Zuradelli, as quoted above, has pointed out that writing is a complicated act; but he has not gone quite far enough in his analysis of the muscular actions required for writing, and that which is certainly of the most vital importance, and which in my opinion constitutes the very essence of the pathology, seems to have escaped his observation.

The act of writing is primarily divisible into (1) *the act of prehension*, and (2) the act of moving the pen: and the act of movement may be again subdivided into (a) the stroke-making movement; (b) the movement of the hand from left to right; (c) from right to left; and lastly (d) the ink-dipping movement. Besides the act of prehension, there is another muscular act which Zuradelli does not mention: this is the poisoning of the fore-arm and hand, which is ordinarily kept about three-quarters prone, the hand being balanced upon the pisiform bone and little finger. Thus it will be seen that writing is divisible into three acts—the *prehension of the pen*, the *poising of the hand and fore-arm*, and the *movement of the pen*, and there is probably no muscle between the shoulder and the fingers which is not brought frequently into action during writing.

The muscular action to which I wish to direct very particular attention is that of prehension. The pen is normally held between the thumb and the first two fingers. The thumb and the index finger form an oval ring through which the penholder passes, being held by the distal and resting on the proximal end of the said oval. The distal ends of the metacarpal bones of the thumb and index fingers are widely separated; the first phalanx of the thumb is abducted; the phalangeal joint forms an angle which is more or less acute in different writers; and the pulps of the terminal phalanges of the thumb and index finger are, but for the intervention of the pen, almost directly opposed to each other. With regard to the first two fingers, the proximal phalanges are flexed, and the two

terminal phalanges nearly straight. The muscles which keep the thumb and fingers in this attitude of prehension are, I believe, with one exception, *intrinsic muscles of the hand*, in proof of which, if the rheophores of a faradising apparatus with big sponges be placed, the one on the palmar surface of the hand between the thumb and index fingers, and the other on the dorsal surface over the metacarpal bone of the index finger (so as to influence more or less all the special muscles of the thumb and first two fingers), the thumb and first two fingers will assume an attitude of pen-prehension (saving only the flexing of the phalangeal joint of the thumb), and a pen held between them will be tightly grasped.

The muscles chiefly concerned in the muscular act are, I believe, as follows:—The *interossei* of the first two fingers, which flex their respective first phalanges (the dorsal muscles further helping the act of prehension by dragging the first two fingers towards the thumb). The *abductor pollicis*, which abducts the first phalanx of the thumb, an action without which proper opposition of the pulps of the thumb and index finger would be impossible. The *opponens pollicis* and *flexor brevis pollicis*, as their names indicate, are also important muscles in the act of prehension. The phalangeal angle of the thumb is maintained, I believe, in a great measure, if not entirely, by the action of the *extensor primi internodii pollicis*. Possibly the remaining intrinsic muscle of the thumb is more or less concerned, but the above-named are the muscles chiefly implicated in the act of prehension of the pen.

The muscular effort of *poising the hand* is, I believe, thrown chiefly on the supinators. The hand, as I have said, is three-quarters prone, and in this position the weight of the hand tends to make pronation complete—a tendency which is checked by the supinator longus, the supinator brevis, and possibly the extensors of the thumb.

The stroke-making movements are accomplished by the long flexor of the thumb, and the extensor secundi internodii, the flexor profundus digitorum, and the extensor communis digitorum.

The movement of the arm from left to right depends chiefly on the triceps extensor, and that from right to left on the

pectorals. The muscles concerned in the ink-dipping movement scarcely require naming.

The five muscular acts above enumerated, which taken together produce the complicated act of writing, are divisible into two classes. *In the first class (consisting of the prehension of the pen and the poising of the hand) the muscles concerned are subjected to prolonged strain, and (especially those concerned in prehension) are kept in a continuous state of contraction often for inordinately long periods.* In the second class of muscular acts the contractions of the muscles alternate with periods of repose. Now, it is a fact acknowledged by physiologists that for healthy muscular nutrition the periods of contraction must be alternated with due intermediate intervals of repose. Sir James Paget,¹ in his Croonian lecture "On the Cause of the Rhythmic Motion of the Heart," has pointed out that "time work is not a singular characteristic of quickly rhythmic organs; it is a rule of life; and its rate in each organism is neither determined nor beyond certain limits alterable by external conditions." He further says that, "whether we regard a rhythmic nutrition as the cause of rhythmic motion or not, we are obliged to hold such a method of nutrition as a fact. For we can be nearly certain that in the heart, as in other muscular or any other parts, the successive impairments and renovations of composition, which constitute the process of nutritive maintenance, are severally accomplished during the successive periods of action and of repose, all exercise being attended with impairment of composition, such as can be repaired only during repose."

Now, as long as a muscle remains contracted it is in a state of exercise, a condition which is "attended with impairment of composition, such as can be repaired only during repose." The muscles by which the prehension of the pen is effected need not of necessity obtain any interval of rest for hours together. During all the several acts which constitute writing, these muscles remain in a state of contraction; for the pen, in stroke-making, in horizontal movement, and in ink-dipping, cannot be released from the grasp of the fingers and thumb.

It is acknowledged that by stimulating a muscle for too long

¹ "Proceedings of the Royal Society," vol. viii. p. 473. Croonian Lecture, May 28th, 1857.

a time, too frequently, or too forcibly, we exhaust its irritability, and the muscles of pen-prehension are certainly subjected to too prolonged contraction, and often (such is the mental condition of these patients) are made to contract with undue and unnecessary force. The proper rhythm of nutrition is upset, the periods of work and the work done are out of all proportion to the periods of repose.

These muscles, whose function has been thus abused, soon begin to respond but sluggishly, or refuse entirely to respond to the stimulus of the will, and the scrivener finds that his grasp of the pen is faltering and uncertain. He finds that he is obliged to take a tighter grasp of the pen, and (unconsciously, of course, as far as he is concerned) he deposes the proper muscles of pen-prehension and substitutes others to perform their office. He begins to grasp the pen, not with the intrinsic muscles of the thumb and first two fingers, but uses for that purpose the big flexors of the thumb and fingers situated in the fore-arm. The *flexor longus pollicis*, the *flexor sublimis digitorum*, and the *flexor profundus digitorum*, are now the muscles of pen-prehension, and the stroke-making movements of the pen are accomplished by the flexors and extensors of the wrist, or the writer finds himself incapable of resting his wrist upon the desk, because the movements of the pen have to be accomplished by the movement of the entire fore-arm by the muscles of the shoulder (the fore-arm being kept by means of its flexors at right angles to the arm). These new muscles of pen-prehension are kept in a condition of prolonged contraction just as were their predecessors, and in time become similarly sluggish, obstinate, and irritably weak, and the scrivener has to resort to new methods of pen-prehension, which generally consist of some mechanical contrivance, either entirely artificial or such as interlacing the pen amongst the fingers. The flexors of the elbow-joint (should they be used) soon strike work from a similar cause, and the triceps extensor is brought into use. The man writes with the pen mechanically fixed in the hand and the arm rigidly extended; the stroke-making movement being accomplished by the movement of the entire body.

Other muscles which are very prone to suffer in writer's cramp are those which poise the hand, and which, like those of

pen-prehension, are subjected to prolonged strain. It is a common observation that the poising muscles suffer in writer's cramp, and the hand is very liable to roll over in the direction of pronation (owing probably to the weakness of the supinators), or more rarely to be jerked in the direction of supination (as in a case recorded last year by Dr. Buzzard¹) by the irritability of those same muscles. Many persons affected with writer's cramp become unable to poise the hand, and are obliged to write with the entire fore-arm supported and the hand in a state of complete pronation.

To illustrate my meaning I have purposely supposed an extreme case. The disease, not unfrequently, does not spread beyond the fingers, but its rapid progression as depicted above is frequently observed. When once the disease has commenced (showing itself perhaps merely as a trifling awkwardness in writing), its progress is liable to be very rapid if writing be persevered in. If, on the other hand, writing be abandoned on the first appearance of awkwardness, and the patient is able to give himself rest while his exhausted muscles of pen-prehension recover their tone, he rapidly regains his lost power. The act of writing is extremely complicated, and for its performance we have seen that a score or so of muscles have to be educated, each muscle being educated to play its proper part. It may be compared to a military manœuvre for the performance of which each soldier has been drilled to do his own share of the work, and for the disarrangement of which it is only necessary that one soldier should be thrown (by some trifling accident, possibly) *hors de combat*. Let us suppose that the first dorsal interosseous muscle of the right hand of a scrivener becomes irritably weak from overwork. His writing at once becomes awkward and demands his attention, and the automatic unconscious act becomes an act requiring more or less of mental effort. From that moment the act of writing is an annoyance and a trouble to him, and the foundation is laid for the condition of mental irritation so often observed in patients with writer's cramp, and which, reacting upon the writing muscles, tends to hasten the progress of the disease. Of the mental conditions of the patients we shall say more hereafter.

¹ *Practitioner*, August 1872.

PAPERS ON ELECTRO-THERAPY.

NO. I.—ON THE RELATIONS OF FARADIC ELECTRICITY TO PAIN.

THE remarkable spread of the medical use of electricity in this country, which has taken place within the last few years, gives that method of treatment a high importance for the readers of the *Practitioner*. English medical men are arousing to a very keen interest in the subject; and as commonly happens in such cases, the zeal of the neophytes is, in many cases, not seasoned with as much knowledge as is desirable. It is the latter fact, quite as much as the intrinsic value of electro-therapy, which calls for authoritative statements from those whose experience has been sufficiently large to enable them to discover the mistakes into which the practitioner is most likely to fall, as well as the advantages he is likely to derive, in the medical use of electricity. This is a work which can hardly be completely done by any one person, though much has been effected by the excellent clinical treatise of Dr. Reynolds. And at any rate it is desirable that rules and cautions should be repeatedly and prominently laid down in order that the profession may be thoroughly permeated by them and familiarised with them.

One of the most important uses of electricity is certainly the relief of pain. And as pain is so common, and often so troublesome a thing to deal with, it is natural that practitioners should eagerly seize hold of what promises to be a new mode of relieving it, without inquiring very minutely as to the precise conditions under which success is most likely to be obtained. The outcome of this indiscriminate employment of the remedy

can only be vexatious disappointment in a number of cases, and, in some, a positive aggravation of the sufferings of the patients.

We are, unfortunately, still partly in the tail of the storm which raged for many years between the partisans of Duchenne and faradisation, and those of Remak and the constant current. By "we" is implied the mass of the profession, for there is probably not very much disagreement now among experts as to the more important points which have so far been studied; it is recognised by such persons that the functions of the two currents are in many respects widely different, especially in regard to the relief of pain. But to the comparative novice this fact has scarcely been made clear; the less so as a great deal of the evidence on which it rests is in the German language, and consequently inaccessible to many, while the views of Duchenne have always been more generally known amongst us, and have therefore left an impression not easily to be effaced even where they were most unquestionably incorrect. Moreover, there has always been a natural prejudice in this country in favour of faradisation, because the discovery of induced electric currents, which are employed in this process, was due to our own Faraday. It is time, however, for everyone to understand that in regard to the treatment of painful affections, faradisation has very distinct and rather narrow boundaries of usefulness; and these it is now our business to define.

1. Faradisation is, in the first place, pre-eminently useful as a *mental counter-irritant*¹ (if we may use the phrase), and therefore will often cure pains of the class vaguely called "hysterical." In the relaxed condition of the nervous tone which belongs to this state, the mere accidental concentration of attention on a particular part of the body will often convert some slightly unusual sensations into the mental perception of actual pain; but this perception is factitious, and can be speedily destroyed by a suitable diversion. For this purpose smart and painful faradisation of the skin is well adapted, and it should be applied to a somewhat larger area than that which the hysterical pain occupies. The surface being carefully dried (and, if necessary, powdered), in order to limit the effects as much as possible to

¹ "Counter-irritation," a word which is dubious and misleading when applied to mere bodily phenomena, is quite in place in describing effects on the mind.

the skin, the current is applied with dry metal or carbon electrodes, one pole being placed on an indifferent spot, the other moved slowly about over the area which we mean to operate upon. The result is, that the mental attention is so scattered and divided among a number of new and sharp impressions, that its morbid concentration is lost, and the sensation of pain disappears. It is very necessary, in the early stages of such cases, to have the electrical apparatus at hand, so that any relapse into the state of actual pain may be promptly dealt with.

2. The pains we have just been speaking of are mainly of a pseudo-neuralgic character; that is to say, they run so far in the direction (or the neighbourhood) of recognisable nerves as to simulate neuralgia pretty closely whilst actually present. Those which are next to be mentioned are not distributed in neuralgic areas, nor do they take the form of spontaneous pain, but that of unnaturally heightened sensitiveness to pressure—the so-called “hysteric hyperæsthesia.” This phenomenon, as is well known, is quite superficial, deep and firm pressure giving less pain than that which merely compresses the skin or mucous membrane (for either may be affected). Here, again, faradisation has a most legitimate office; but it needs to be applied with a firm and unsparing hand. Supposing, for instance, that the hyperæsthetic area is on the skin, one uses dry conductors, one being placed five or six inches distant, on an indifferent spot; the other (which should be in the form of the “wire brush”) should be so used as to apply a kind of electrical flagellation to the whole of the affected area. This must be kept up for several minutes, with a powerful current; and if the painfulness of the proceeding becomes intolerable, it is better to give the patient a little chloroform and go on (as Althaus, I believe, first suggested) than to do the thing by halves. It is not often that this procedure fails to cure in one, or any rate two, sittings: most frequently it is at once successful if properly carried out. If the tender surface be mucous—in mouth, rectum, or vagina—the process is still more disagreeable. We use metal conductors as before, but of course cannot employ the wire brush to the mucous surface, but a solid disc or button instead, moving that electrode about over the whole sensitive area.

3. We come now to the large class of cases in which the pains are evidently situated either in the muscular or the tendinous structures, and are closely connected with the degree in which the muscle has been over-exerted in proportion to its nutrition. These "myalgic" affections are also frequently in part immediately excited by the action of external cold and damp upon a similarly under-nourished muscle. They are distinguished by the violent exaggeration of the pain which is caused by any movement of the affected part. There can be no doubt that local faradisation will very usually remove these pains; the only objection to its use is that for the most part the affection is curable by less troublesome and disagreeable means. The hypodermic injection of morphia, in dose of $\frac{1}{6}$ grain or $\frac{1}{4}$ grain, locally, or the muriate of ammonia (internally) in 30-grain doses, will often give prompt relief; or Dr. Reynolds' plan, of sewing a piece of oilskin outside the jersey over the painful part, will do the rest. If faradisation is to be used, however, it is important to remember that it can only be successfully employed in one way; namely, by strictly limiting its action to the skin. For this purpose we must have the skin very dry, and use dry conductors. If we allow the current to penetrate to the muscle and set up contractions, we shall only add to the agony and render the malady more tedious than it is apt to be naturally.

This brings us to the consideration of a particular class of muscular pains, viz. those caused by sudden laceration of fibre, an accident which is not very uncommon. Fresh interest in the faradic treatment of these affections has been raised by a recent case under Professor Broca, of Paris,¹ although the method is already some years old. The patient got the injury in some playful scuffle, the arm being pushed forcibly (in a direction which is not very clearly stated), while the biceps was contracted: the latter muscle gave way. Local faradisation was immediately employed, and though painful it immediately restored the power of raising the hand to the head. The reporter (M. J. Lucas-Championnière) remarks on the strangeness of several circumstances connected with these ruptures of muscular fibres. He does not seem inclined to think that the

¹ Journal de Méd. et de Chirurgie pratiques, May 1873, art. 9,507.

contraction of the muscle itself could produce the accident, but rather (with M. Broca) that the already contracted muscle is torn by some violent wrench in the direction of extension; and is especially liable to this if its tissues be in an unhealthy state. But how comes it, he asks, that a method (faradisation) which causes energetic and painful movements of the torn muscle can at once replace it in a condition to perform the usual voluntary movements without pain? We doubt, however, if this be quite an accurate statement of what takes place. In the first place, we do not think that faradisation *which makes the muscle contract* is the real agent at work. In a case where we personally used faradisation with complete success, the patient had torn a portion of the biceps in holding on to a rope which had a heavy weight at the other end; the machine employed was the common rotatory electro-magnetic apparatus, and one of the ordinary brass handles was grasped by the sufferer, while the other was moved about on the skin over the injured muscle without exciting any notable contraction: yet in a few minutes the arm could be flexed and extended painlessly. The rupture was distinct and visible to the eye. There is also, of course, a probability that muscular fibres which are completely divided, even if their elements be made to contract, would give far less pain than if their attachments had remained entire.

4. There is a somewhat indefinite class of so-called rheumatic pains which appear to be seated in the ligaments of joints, or in the periosteum of bones, occasionally also in fasciæ. Of course (and more especially under the periosteal group) there is a great danger of reckoning cases that are really syphilitic; but after careful exclusion of these, a considerable number remain which it is permissible to call chronic fibrous rheumatism. It is very doubtful whether faradisation exercises any direct influence on this affection; for our own part we have not been able to obtain any decidedly positive results, and are inclined to suppose that cases which have appeared to be relieved were really of a myalgic nature. One of the fairest instances in which to test the power of faradisation would be that peculiarly chronic and intractable affection—rheumatism of the plantar fascia: but it must be remembered that, in many persons, the skin of the sole is so dense and resistant, that there will be no

chance of applying the electricity with sufficient penetrating force unless the integument has first been thoroughly macerated with warm water.

5. The great question, however, is whether faradisation is of use in true neuralgia; and to this we believe that a decided answer in the negative must be given. It is easy enough, no doubt, to produce evidence of cures by faradisation in what has been called neuralgia by some persons; but it must be remembered that the present tendency of medical classification is to separate true neuralgia very distinctly from the various other pains which have been confounded with it. No pain ought to be called neuralgia unless it obviously follows, on the whole, the track of a recognisable nerve; the affections of this class have a very definite clinical and family history which enables us to identify the disease as clearly as we can identify any malady that exists.

There is ample scope for testing the power of faradisation to relieve the pain of genuine neuralgias, since these are common enough and, in several forms, are so typical that they cannot be mistaken. Personally we have tried faradisation over and over again in distinct trigeminal, brachial, sciatic, and cervico-occipital neuralgias, and the general result of our experience is quite clear. In a considerable number of cases, probably the majority, the process only aggravates the pain; and we have known instances in which a neuralgia which, to all appearances, had begun to recede, was at once wakened up and made worse than ever, and more rebellious to the influence of ordinary palliatives than before. In other cases we have seen momentary apparent benefit, which seemed due to the nervous surprise, so to speak; but such benefit does not endure (as it often does in hysterical pseudo-neuralgia), the pain soon returns again, and, if anything, with increased violence. In other cases, again, faradisation has produced no effect whatever, good or bad.

On inquiring further into the matter there are at least two reasons why faradisation would be likely to prove either indifferent or hurtful in the treatment of true neuralgia. If the current does not penetrate beneath the skin, the only effect produced will be a superficial irritation which might (in a reflex manner) possibly act beneficially if it could be kept up for a long

time (as the effect of a blister is), which however cannot be done. On the other hand, supposing the current to penetrate more deeply, it is likely to do mischief in either or both of the following ways:—If it encounters the nerve, it inflicts upon it the jarring sensation which the very nature of the interrupted current necessarily involves, and which we cannot but suppose must be exceedingly inimical to the restoration of the irregular nerve action to a state of equilibrium. On the other hand, it is difficult or almost impossible to prevent the *penetrating* current from exciting the surrounding muscles to contraction: and it is well known that the most certain aggravation of neuralgia is produced by the dragging and squeezing of muscular movement: the strongest examples being seen in the effects of mastication in neuralgia of the third division of the fifth, and of certain complicated muscular actions (*e.g.* pianoforte playing) in brachial neuralgia.

The above remarks give a rough outline of the reasons why faradisation is generally useless or objectionable in true neuralgia. In that disease it is at once desirable to act on the nerve itself, and yet to act with the greatest gentleness and steadiness. The true neuralgias, as we have tried to show elsewhere, involve a real change (it matters little now whether we call it atrophy or rhythmical molecular alteration) in the posterior or sensory root of the nerve, and this state is best combated by such means as tend gradually and steadily to restore the nutrition of the nerve. And, on the other hand, clinical experience teaches us, very positively, that there are no such terrible excitors and aggravators of neuralgic pains as repeated intermittent impulses. The pulsation of a vessel, for example, which presses upon a neuralgic nerve, sends thrill after thrill of pain through it, till at last the torture becomes unbearable, even to a patient who perhaps could endure well enough a constant though severe suffering. Now, the intermittency of the interrupted current is a matter of degree, and consequently the amount of mischief that may be done by faradisation varies very much according to the apparatus used and the exact mode of using it. This brings us naturally to the final remarks which we have to make, which concern the question of apparatus.

A fairly good faradiser for those cases in which we desire to

inflict a good deal of pain (or at least a considerable nervous perturbation), is the ordinary rotatory magneto-electric machine, which, till very lately, has been absurdly supposed, in this country, to be efficient for all electro-therapeutic purposes whatever. There is no question, however, that it does very well for hysterical pseudo-neuralgia and hysterical hyper-æsthesia, especially if the patient be made to hold one of the brass handles, and a very coarse wire brush be used as the other electrode, and freely applied to the affected part. But it is usually (except for the mere saving of trouble) better to use a volta-faradaic apparatus—*i.e.*, one in which the motor power is got from a galvanic or voltaic cell; and for the purpose in hand a very simple and inexpensive apparatus will do, such as Hearder's "20-power" machine,¹ though of course it is better, if possible, to supply oneself with a thoroughly complete instrument, like those of Stöhrer or of Messrs. Weiss.

In dealing, however, with painful affections by means of faradisation, there are more considerations than one to be taken into account in the choice of the apparatus to be used. Besides mere questions of convenience in application, there is the question, what degree of frequency and regularity do we desire in the interruptions of the current?

As a general rule, it is true that, "in irritation by induced currents, the more rapid the interruptions the greater is the pain produced."² The interruptions are rendered more frequent, or lower, by manipulations with screws, which place the interrupting hammer nearer to or farther from the platinum point. But in dealing with actual clinical cases, it will not be found that the therapeutic facts exactly correspond with this rule. The object being to create intense nervous surprise and distraction, it will not unfrequently be found that, a current of sufficient intensity having been provided, a series of interruptions which is slow on the whole, but has an *irregular rhythm*, is more effective than a mechanically regular series of rapid interruptions. It is not easy to lay down precise rules here, but the

¹ The reader who may purchase one of these useful little batteries is warned not to pay the slightest attention to the absurd remarks on electro-therapeutics contained in the pamphlet which is sent with them.

² Ziemssen, *Die Electricität in der Medicin*. 4th edit. 1ta. Hälfte.

following is about accurate as a representation of my own experience:—In proportion as the malady is beyond the patient's own control, it is desirable to employ a regular series of intermissions, and *vice versâ*. Given, that is to say, a patient with none of the common convulsive phenomena of hysteria, but with some definite paralysis or anæsthesia, and whose skin presents a patch of acute hysteric tenderness; then I advise the use of a tolerably intense current with rapid and even intermissions. The patient should be placed under chloroform, and the dried skin should be well fustigated with the wire brush of a Stöhrer's or Weiss's faradiser, the secondary current being employed, of high strength. But if the affection be of that exceedingly common kind in which the morbidness of the will has much to do with the painful sensations themselves, then it is a good plan to proceed differently. For such patients no chloroform should be allowed; the electrodes should be brass discs, and a common magneto-electric apparatus may be employed. The current being arranged at a high degree of intensity, the driving-wheel is to be urged at a varying and irregular pace: it will be seldom that the morbid sensations do not give way after a few sittings conducted in this manner.

In speaking of the limitations of faradisation as a remedy for pain, we have not forgotten, though we have left so far unmentioned, the methods which are called electric pencil and electric moxa, and which aim at producing a more severe and continuous painful impression. Our own experience is decidedly in favour of the abolition of such methods of treating pain; they ought only to be used, we think, for cases in which there is every reason to think that the whole symptoms are mere malinering. If it be really desirable to push the skin irritation beyond the limits already traced, it will be much better to lay aside electricity and resort to the more prolonged and gradual excitement which can be produced by blisters; and if these fail (especially when used in conjunction with hypodermic injections of morphia), we must resort to the constant current. In all the true neuralgias there cannot now be a question that the latter is essentially the right, and the only right, form of electricity to be employed.

As a parting word of insistance upon the necessity for not

employing faradisation except within its proper limits, we must especially dwell upon one variety of malpractice which has not unfrequently been followed by very disastrous results. We have had occasion to know that in cases of rachialgia (spine-ache) it is not uncommon for practitioners to apply one pole of a common magneto-electric apparatus to the nape of the neck and the other to the sacrum or to the feet (in a water bath), turning on a pretty sharp current. Such practice is not merely senseless, it may prove very dangerous; for the shock which is thus given to the system is much more serious than that produced by any amount of pain inflicted upon a limited skin area. There is no reason to think that such faradism has any direct effect upon the spinal cord, but in a reflex manner it may have a most serious effect; and the greatest general prostration, or even paraplegia, may be produced. It is really a heavy disgrace to the profession that such utterly reckless proceedings can possibly occur as some which we have personally known to take place in the supposed electrical treatment of what the practitioner was pleased to call hysterical pains.

ON CHRONIC POISONING WITH CHLORAL HYDRATE.

BY DR. LUDWIG KIRN.¹

(*From the Allgem. Zeitsch. für Psychiatrie.*)

TRANSLATED AND CONDENSED BY THE EDITOR.

THE immense literature of chloral hydrate, which represents, however, but a fraction of the cases actually observed, affords many references to acute poisoning involving the greatest danger to life, or ending fatally in spite of remedies. Cases of the latter kind have appeared, especially in the English journals, with a truly fearful frequency.

Much fewer are the published observations on the changes which the long-continued use of chloral hydrate produces in the organism. If some observers have failed to recognise any such changes even after long administration, it should be remembered that not only are the slighter disturbances liable to be overlooked, but especially that, from the experience of ourselves and others, the individual tolerance of patients for chloral varies within very wide limits.

We administered chloral hydrate, for the most part, once daily, as a hypnotic, in the dose of 30 to 60 grains, or occasionally 75 to 90 grains; with our present experience we should now rarely go beyond the dose of 30 grains. In particular cases we gave, besides the evening dose, one or two others in the day, to calm excitement. Our early experiments having warned us against the hypodermic use of chloral, it was afterwards always given by the mouth (or else by the rectum, with similar effects).

¹ This paper is substituted, at the last moment, for an important expected original communication which has not yet reached us from France.

The inducing and hypnotic action of the drug in cerebral and nervous disorders proved to be exceedingly variable; whilst with many the recommended dose of 30 grains continued for a long time to produce the desired effect, and in others only a gradual increase of this quantity was needed, in other patients there was but slight result, although the dose was gradually increased to 60 and in one case no sleep was obtained, although the amount was rapidly raised to 90 grains. In many patients under apparently similar external conditions, the same quantity would sometimes succeed and sometimes fail. We shall here only record ourselves with a series of morbid phenomena which appeared sooner or later in the course of a continuous employment of this hypnotic, collating these with the experiences of others.

The most prominent of the symptoms were those connected with the skin: their production for the most part depended on the cutaneous vaso-motor nerves. They were more or less extensive erythemas, and pustular or papular exanthemata.

The clinical observations of Schüle¹ on chloral erythema must here take the first place. "The use of chloral produces a tendency to fluxionary hyperæmias, with increased and strengthened heart-action. This is first and most considerably manifested in the head, the vessels being dilated, and an intense erythema occurring, at first in spots, but afterwards more diffusely. In the more pronounced forms the erythema extends downwards to the trunk, and becomes general, in which case it seems to follow, by preference, the course of the larger nerve-trunks. This chloral-rash remains latent until it is set going by some stimulus to the vascular system, but then appears in an intensity and rapidity which are proportioned to the existing current of (general) chloralisation."

I reproduce these results of Schüle's verbally, because I can entirely confirm them. Although, from the varying chloral idiosyncrasies of individuals, they are not always observed, the statement is true for a great number of cases, and I have at this moment a series of patients under my eyes in whom the chloral-rash can be produced with the certainty of an experiment. For

¹ Ueber eine bemerkenswerthe Wirkung des Chloral-Hydrats. Allgem. Zeitsch. für Psych. xxviii. 8.

instance, in a paralysed patient, who took 30 grains of chloral every night, ten minutes after she had drunk her beer, there occurred increased action of the heart and spots of roseola upon the forehead, nose, cheeks, and neck, which quickly coalesced into a patchy erythema, with swelling and heat of the affected parts, which symptoms disappeared in about an hour. Still more strongly appeared the same symptoms in a young and previously healthy woman affected with mania, who every night took 30 to 45 grains of chloral (although she had not previously suffered from congestion of the face). As soon as she took a glass of beer there was strong pulsation of the arteries, and the whole face was swollen and of such an alarmingly deep colour that we were obliged to forbid the use of wine and beer. At present we but rarely allow alcoholic drinks to patients who are being treated with chloral. In another young woman suffering from mania, who took 30 grains of chloral at night, four ounces of wine were sufficient to induce the chloral-rash.

Chloral erythema has also been studied from other sides ; we may specially mention the observations of C. Browne, which led him independently to results similar to those of Schüle. He too observed as a consequence of chloral a great tendency to congestions of the head and face, which in a few cases were limited to the cheeks, but in many extended to the forehead, neck, and ears. He observed simultaneous excitement of the vascular system, strong contraction of the pupils, and ingestion of the conjunctiva. The symptoms also were at their height after the taking of quite moderate doses of alcohol ; he attributed this to temporary paralysis of the vaso-motor centres in the head and neck. Browne also observed another case in which, after a dose of chloral (the amount of which is not stated), a diffuse inflammatory redness appeared over the whole body, so that it was thought advisable to isolate the patient ; in ten hours this redness had disappeared. Husband gave to a patient daily for eight days two 20-grain doses, and for five days more two 30-grain doses of chloral ; a scarlatinal rash broke out over the whole body, accompanied by fever and tenderness of the skin, and was followed by desquamation.

The effect is not always limited to congestion and erythema of the skin, but other skin affections are occasionally produced ;

for instance, our female patients, who had taken 60 grains of chloral daily, first had erythema of the face, and later a papular rash on the arms, with red bases. In some nettle-rash occurred.

The swelling, accompanied or not by rash, which has been noticed in the face after continued use of chloral, may equally occur on extensive portions of the body. In several patients observed at Illenau a swollen condition of almost the whole body was noticed, which might be ascribed to serous infiltration of the skin from stasis of blood.

With these affections of the skin must be associated affections of the mucous membranes, which, so far as they are not the result of direct chemical irritation, must be considered analogous to the former; i.e., they are produced by paralysis of the vaso-motor centre. For instance, in some patients treated with chloral we observed redness, swelling, and secretion of the conjunctiva, which became severe if the medicine was continued, but speedily disappeared on its disuse. Other observers, especially Balfour and Brady, have noticed this conjunctivitis. In three of our patients, probably from the mechanical irritation of the medicine, there was moderate catarrhal sore-throat, with pain in the fauces. In one of Curschman's patients there was pronounced redness and swelling of the epiglottis and of the false vocal cords.

The evil effects of chloral are not always limited to vaso-motor paralyses and transitory neuroses of the skin and mucous membranes; if the congestions are not removed, the after-consequences may be severe or even dangerous if the seat of the affection is in the vital organs. We may here refer to a case which resembles the former as regards the affection of the skin and mucous membrane, but which became serious in consequence of severe swelling of the glands (Chapman: *Lancet*, 1871). Reimer observed in a series of patients the following fact, especially after the use of morphia and chloral together. After slight external pressure there was congestion in circumscribed spots with much lowered sensibility, which quickly disappeared if the pressure was soon removed. Under less favourable circumstances, the red spots swelled and assumed a darker colour; vesicles were soon developed which might even

run on to sloughing. This phenomenon is distinguished from the usual mark after long pressure in conditions of gradually sinking vitality, especially because, whilst the epidermis and cutis remain intact, it extends into the deep subcutaneous tissue.

An important symptom which we have noted in a series of cases of the long-continued use of chloral is an interference with respiration, which may remain slight and scarcely troublesome to the patient, or may become positive dyspnoea. This symptom was experimentally produced by the Swede Hammersten, who observed severe dyspnoea in cats that had taken chloral, and was briefly noticed by Jastrowitz, one of whose patients, while taking chloral, suffered from severe dyspnoea with occasional cessation of breathing; and it was finally completely described and explained by Schüle, who observed a patient who, after long use of chloral, used regularly to suffer after meals from a sense of oppression which made going up stairs extremely difficult, and even interfered with speech, although there was no chest disease to account for this. The symptoms persistently recurred in spite of all treatment till the chloral was left off, when the oppression entirely disappeared.

A similar chloral dyspnoea, though not so long continued, occurred in many cases observed by us, either with or without a rash, and a feeling of heaviness and anxiety.

That the chloral dyspnoea does not always stop at the lower degrees, but may proceed to the most severe and dangerous developments, is shown by the following observation communicated to me by an eminent physician. This gentleman was summoned in consultation to a lady prostrated by long sufferings, who had of late suffered from attacks of extreme dyspnoea, which had increased to asphyxia; at the same time the face was swollen, the facial muscles paralysed, and there were also all the signs of cerebral effusion. Every remedy had failed, and the patient seemed on the brink of the grave. The physician therefore recommended the discontinuance of a daily dose of 45 grains of chloral which had been given as a hypnotic; whereupon all these highly alarming symptoms vanished in an almost magical way, the cerebral disturbance ceased, and the respiration quickly resumed its normal type!

The dyspnœa may be anatomically explained, by analogy with the effects of chloral upon the skin and mucous membrane, by hyperæmia of the lungs which is produced through the channel of the vaso-motor nerves. We find here a further confirmation of the assumption that chloral operates upon the vaso-motor centre and the medulla oblongata, and that its paralysing influence extends thence to the peripheral branches of the affected nerves. This might also lead to a practical contra-indication of chloral in all morbid conditions where there is a tendency to congestions or stases of blood in the lungs.

We come now to a fourth group of cases in which both the quality of the symptoms and their greater or less extension in the organism indicate a distinct change in the composition of the blood. In this connection the following cases observed by Crichton Browne may first be referred to; their interesting phenomena justify a detailed report:—

CASE I.—A woman, aged 69, suffering from periodical mania, had 20 grains of chloral thrice daily: on the fourth day a redness was developed on the skin of the chest and shoulders, which did not vanish on pressure; on the sixth day the eruption had extended over the whole trunk and limbs, livid spots and deep red patches alternating. The lips and the mucous membrane of the mouth were excoriated, the gums spongy, the tongue blistered and ulcerated, the breath fetid. The general state was one of great depression; pulse 120. On the eleventh day the ulceration of the mouth had extended further; the lips were covered with crusts. The petechial eruption was diminished on the chest and abdomen, the spots were yellowish with patches of white skin between them; the spots on the arm lost their redness later. On the fifteenth day there was a sort of general desquamation; fissures of the skin over the sacrum, and in the neighbourhood of the joints. From that time convalescence proceeded, and ordinary health was restored.

CASE II.—A woman, aged 46, suffering from cardiac disease, hemiplegia, and dementia, took 15 grains of chloral three times a day, with a calming effect. On the nineteenth day of the treatment numerous purple-red spots appeared in the neighbourhood of the left elbow; on the next day many similar spots were seen on the shoulders and fore-arms, which coalesced with

the others. On the twenty-first day livid spots came on the face ; the left arm swelled and became hard ; on its reddened surface appeared a multitude of minute points of a much deeper colour, which did not diminish on pressure. Next day there were dark purple spots and discolorations, some small, round, and circumscribed, others broad and irregularly shaped, on the legs and abdomen, and in stripes on either side of the vertebral column. Simultaneously with the petechiæ there were great prostration, tendency to somnolence, weakness and excitability of the pulse, sore lips, thickly coated tongue. On the twenty-third day the spots and discoloured patches had extended in every direction, and the previously bright red spots had assumed a deep purple colour. Finally, signs of lung congestion appeared, with gradual failure of power, and death, after several fainting-fits, on the twenty-sixth day. At the autopsy numerous ecchymoses of every shape and size were observed more or less on all parts of the skin ; the right lung was congested and cedematous, the heart dilated and its valves thickened ; over the right central hemisphere there was a large arachnoid cyst containing fluid blood.

With the foregoing may be joined a case related by Monkton, in which, after four days' administration of 60 grains of chloral daily, a rash resembling slight variola with hæmorrhagic purpura appeared, and death occurred on the sixth day, by syncope. Finally may be mentioned two patients of Pelman, in whom, after treatment with chloral, there were larger and smaller petechiæ over the whole skin : in one, which proved fatal, numerous petechiæ were found on the mucous membrane of the larynx and under the endocardium ; and a hæmatoma on the right side in the skull reaching to the base, the fluid contents of which gave evidence of their recent origin.

I shall now relate a case observed by myself, which is yet more striking from the multiplicity of its phenomena, which are of a kind perhaps to give us some clearer understanding of their origin. The case was observed by me at a time when the evil effects of chloral hydrate were not yet known ; the medicine was therefore continued in spite of the most multiplied symptoms because chloral was not for a long time recognised as their cause : the affection was therefore followed up further than we should dare to do now that our increased knowledge would

oblige us to stop at an earlier stage. [Here follows a detailed report of the case, which need not be given.] If we sum up the weightier symptoms of this case, we find a young, strong, previously healthy person suffering from uncomplicated mania, in whom on the ninth day of chloral treatment a rash appeared in the form of groups of red spots which soon became confluent. On the twentieth day the temperature and pulse rapidly rose to a febrile pitch; three days later the temperature had reached $106^{\circ}\cdot7$; large and repeated doses of quinine were given without result, and baths had only a temporary effect. Œdematous swelling of the face, cheeks, eyelids, and ears now set in. During the whole course of the disease, the skin, so far from returning to its natural appearance, was the seat now of impetiginous, now of moist, and now of scaly eczema and ichthyoses, so that the process of desquamation, instead of being short as in the acute exanthemata, occupied many weeks, during which great sheaths of epidermis were cast off from all parts of the body. The profound lesions of the skin nutrition were evidenced in the later stages by a remarkable shedding of the hair and a gradual falling off of all the nails of the hands and feet. The affection of the skin was accompanied by a similar one of the mucous membranes, first of the intestines, which kept up watery diarrhœa in spite of medicines, and then by a similar affection of the conjunctiva and the bronchi. From the sixth week of the disease onwards a series of large abscesses formed on both arms over the shoulders and arm-pits, which secreted a considerable quantity of pus. Whilst these phenomena were occurring, there had been for eight weeks a continuous fever, occasionally remitting, and then again running up to a temperature beyond 104° .

The symptoms which we have now collectively described must be defined as chronic blood-poisoning. We cannot, however, place this in any of the known groups; we have not to do with a pyæmia or septicæmia, nor with a metallic or vegetable poisoning, since none of the causes have been at work which would lead to these affections, nor do we observe their characteristic phenomena; still less did the affection which the medicine produced in this patient resemble puerperal mania. In fact, there was no other external cause except the administration of the chloral: this medicine, which in even much larger single doses

produces no such effect, was for ten weeks given in nightly doses of 45 to 60 or even 75 grains, sometimes in two doses daily. The symptoms began, after a certain saturation had been produced by accumulation, to spread further and further, and finally to assume the complete picture of a chronic blood-poisoning.

The origin of the disease leads us thus, by exclusion, to conclusions which have a high degree of probability, and we are also in a position to adduce positive facts. If a glance be cast at the symptoms observed by ourselves and others, after a more or less continued administration of chloral, we meet with the greater part of the phenomena observed in our last case, especially the very various affections of the skin and mucous membranes, the alterations in vascular action, and finally the profound alterations of the blood, which in some cases remind us of the phenomena of scurvy. The characteristic feature in the morbid picture which we have given consists less in symptoms which in themselves are altogether new, than in the assemblage of the most heterogeneous phenomena, which previously had only been observed singly, in one person and in a most aggravated degree of intensity.

Reviews.

Principes d'Electrothérapie. Par le Dr. E. Cyon, Professeur de Physiologie à l'Université et à l'Académie de Médecine de St.-Petersbourg, &c. &c. Paris : J. B. Baillière et Fils, 1873. 8vo. pp. 277.

WE have seldom read any book, by an author of incontestable merit in many respects, which seemed to us more thoroughly unsatisfactory in tone than that which lies before us. The name of Cyon is really distinguished in several departments of physiology and of clinical medicine; and although some of his most ambitious researches have of late been somewhat discredited, the scientific world is always willing and even eager to hear his opinions on any subject which he professes to have particularly studied. But there is an almost offensive air of superiority about the way in which M. Cyon lays down the law upon all sorts of questions, more especially as in many cases where it might be supposed by the uninitiated that he was stating important novelties he is really only recapitulating facts which are quite familiar to all serious workers at electro-therapeutics. It is especially remarkable that, although he expressly holds up electro-therapeutists to reprobation for their partial and intolerant opinions, he is personally guilty of the greatest rashness and a severity amounting to discourtesy in his comments on men not less eminent than himself, and who have devoted years of patient labour to the very object which he represents as supremely important—that of placing electro-therapeutics on a basis of sound physical and physiological knowledge. To take but one instance, his treatment of Ziemssen is unpardonable—we refer to the manner in which he criticises (pp. 252, 253) that author's very important classification of the different stages and degrees of excitability of paralysed nerves and muscles to the induced and the constant currents respectively. Even supposing that M. Cyon is right, and that Ziemssen was premature in some of his parallelisms between particular stages of degeneration and the effects of particular modes of electrification, the tone of his

remarks must be considered ungracious and improper as towards an investigator who has been singularly free from the reproach of narrow and prejudiced ideas, and who has not merely rendered most valuable services to electro-therapeutics, but has equally distinguished himself in other departments of medicine.

M. Cyon is never tired of throwing scorn upon those who presume to try and work out clinical applications of electricity, without having personally devoted "de longues années" to the labours of the physiological laboratory, and to the study of the physical properties of electricity. Now we are by no means among the number of those who would discredit either of those modes of preparation for the practical use of electricity in medicine, but we unhesitatingly maintain that it is by no means necessary, nor even desirable, that the field of electro-therapeutic research should be cultivated only by those who have the time, and the peculiar frame of mind which gives an inclination, to pass "long years" in the more abstract studies respecting the relations of electricity to the organism. On the contrary, we believe that the great advances in electro-therapeutics must be for some time to come, as they have assuredly hitherto been, the work of men who, with a sound knowledge of the elementary laws of electricity in itself, and of the principal facts which have been made out by physiological experiment, combine a keen activity in testing the real value of methods which have been recommended or discredited upon merely theoretical grounds. And we must say that M. Cyon himself affords more than one conspicuous example of the blunders into which the mere laboratory student is apt to fall. For the present we shall only point out one of these: in his chapter which deals with the various instruments for employing medical electricity, he discusses, amongst other things, the value of Smee's elements as a source of the constant current: and announces the remarkable opinion that *it is impossible to make use of this battery for the therapeutic application of electricity*. He bases this conclusion on physical experiments respecting the constancy of the current—experiments which, for that matter, tell us nothing new. It is surely a sufficiently familiar fact, to all who possess a moderately competent acquaintance with electrical apparatus, that from a purely physical point of view Smee's battery is defective, both in regard to variations of electro-motive force, and to the oscillations of internal resistance. It is one thing, however, to state this as a physical fact; it is quite another thing to prove that a battery of Smee's elements may not be made to act with practically good constancy upon the body. Fortunately we are not left to guesswork upon the latter point. Not only has Benedikt habitually employed Smee's elements, in all cases where he required an easily portable constant current apparatus, with the

greatest success, but in this country the efficacy of this battery has been most fully tested during the last two or three years. We have personally enjoyed good opportunities of working with Daniell's battery, with Stöhrer's Bunsen, and with Smee's (as modified by Weiss and Son), and can testify in a very decided manner as to the comparative results obtained. These results, so far from bearing out M. Cyon's statements, show that a properly-constructed Smee's battery acts with a great degree of constancy on the human body: the test being that it will act day after day for many weeks, upon the same case (as in various cases of paralysis with atrophy that have been under our care), without any failure of the intended effect upon the muscles, and with a steady improvement in the patient's condition. So decidedly has this proved to be the case, that we have gradually come to work with it, in preference to all other batteries, in the majority of cases; and we can certainly state that M. Cyon's *a priori* condemnation of Smee's elements is utterly unjustified by practical facts. We grant at once, the partial inconstancy of the battery; but constancy is a thing of degrees, and when the body is taken into account as well as the battery we may and do find it desirable to make some sacrifices in order to overcome the difficulties that we meet with. And although, in a theoretical point of view,¹ the best Smee's battery may be greatly inferior to a Siemens-Halke's Daniell, it will be found to stand very well the tests on the one hand of working upon muscles which require to have their lost faradic irritability restored, and on the other of relieving severe nerve-pains.

One thing which the present extensive use of the portable Smee's battery has helped to demonstrate, is the practical fallacy of the doctrine, so much insisted upon by Remak, that the elements of a constant battery require to be of large size: and we are glad to see that upon this point Cyon's theoretical views have led him to conclusions which are practically true. It was with considerable scepticism that we personally commenced the use of elements which present but a small surface to the exciting fluid, and we were agreeably disappointed to find that they worked quite well. And now we find M. Cyon developing a deduction from Ohm's law, which agrees quite well with this conclusion. He points out that the important factor—resistance—is divisible into two portions, (1) resistance within the pile, and (2) resistance within the circuit: according to the relative strength of these two, a perfectly different mode of application will be

¹ As proofs of what a properly-constructed Smee's battery can do, we would simply point to Mr. Craddock's case of facial neuralgia, in the present number of this journal, and to the case of lead-poisoning with extreme atrophy of muscles recorded by Dr. Anstie in Vol. III. of the Clinical Society's Transactions.

required. If the resistance within the pile be the greatest, the intensity of the current increases in proportion to the surface of the elements: but if (as is really the case in electrifying the human body) the resistance within the battery is trifling compared to that within the circuit, then the mere increase of surface does not augment the intensity of the current, which depends upon increase of the number of elements. Of course this is no really novel statement, but it puts in a concise way the true justification for the use of small elements. But this very principle might well make one suspect that the oscillations of resistance within a Smee's battery (or any other in which both elements are immersed in the same fluid, to which M. Cyon strongly objects) might prove but a trifling consideration in the practical working of the current upon the body.

In a similar manner we must altogether object to M. Cyon's condemnation (though milder than that which he bestows on Smee) of the Bunsen's elements. When properly constructed, as in Stöhrer's modification, these elements form a very excellent battery for most of the purposes of the constant current: and in fact a large amount of excellent practical work has been done with this battery. What it principally lacks is, that the finer graduations in the lower degrees of intensity (*i.e.* in the use of 1 to 6 or 8 cells) can scarcely be obtained: this and certain mechanical inconveniences (smell of disengaged gas, fragility of the carbon plates, &c.) do somewhat stand in the way of its more general use.

Having said so much, just by way of a necessary protest against the assumed infallibility of M. Cyon, we are very ready to admit that his work is valuable, and occasionally original: though very far from complete as a manual of electro-therapeutics. Of its incompleteness we need say no more than to mention that he lays down no general principles that can guide us in the application of electricity for the relief of pain. But as regards the effects of electricity upon motor nerves and muscles he is, on the whole, an instructive writer; and his remarks upon galvanization of the brain, the so-called "galvanization of the sympathetic," and galvanization of the spinal cord, are seasonable and practical. Of direct galvanization of the brain, which was introduced by Remak, and which still finds a considerable credit among electro-therapeutists, he advises the entire abandonment. He admits that currents can be sent through the cerebral mass, as has indeed been fully proved by the experiments of Erb: but he remarks that we can scarcely ever have sufficient knowledge to be able to aim the current exactly at the seat of disease; that there can be but a very few cases in which irritation of a diseased brain would be any use; thirdly, that we should never be able to limit the action to the part we desired to

influence; and finally, that unless we use currents which are of admittedly dangerous strength, we shall fail to overcome the "colossal resistance of the cranial bones." As regards galvanization of the spinal cord, Cyon propounds very different views. It has generally been supposed that the bony envelope of the cord presented great impediments to the production of any useful, and especially of any calculable effect by its "direct" electrization. He argues that in the propagation of electric currents in non-homogeneous conductors, the intensity of the current in each separate portion of the conductor is inversely proportionate to the resistance; and therefore that if a current passes through two parts of a conductor, one of which conducts ten times as badly as the other, the intensity of the current will be ten times as great in the well as in the badly conducting substance. But the bones of the spine conduct ten times as badly as the matter of the cord; consequently, if we apply a current over the spinal column, the electricity will diffuse itself, by preference, in the cord rather than in the bone, viz. through the openings between the apophyses, the ligaments being as conductive as the medulla itself. In this way he maintains that even very feeble currents may be made to act directly upon the cord. If we use long and narrow conductors, which can be pressed well into the hollows by the side of the spinous processes where the muscles are thin, we shall succeed well with very moderate currents. Thus Cyon applied a current of twenty Daniell's cells to the cervical region of a lady who suffered from exophthalmic goitre, and was enabled to directly regulate the pulsations of the heart, although, as he remarks, the cardiac nerves require rather intense currents for their excitation. Besides the effects produced in spinal galvanization upon the general mass of the cord, there are some important advantages in the fact that the current passes, in the first instance, through the posterior roots and the posterior column. Cyon believes that a commencing atrophy may be arrested: and he specially calls attention to the fact that by stimulating the posterior roots the irritability of the anterior roots may be favourably influenced, since the latter depends greatly, as Cyon has elsewhere shown,¹ on the condition of the posterior roots.

Cyon has no doubt that galvanization of the spinal cord effects a directly modifying influence on its nutrition, although it is not yet possible to exactly specify the nature of this. We sincerely hope this may prove true, and are in no way inclined to undervalue Cyon's testimony on the subject, although our personal experience of galvanization of the cord has not as yet given us reason for very sanguine hopes. Unquestionably, however,

¹ De l'Influence des Racines nerveuses postérieures de la Moelle épinière sur l'Irritabilité des Racines antérieures (Mém. de l'Acad. de Saxe, 1865).

there is much good to be effected in morbid conditions where the posterior roots are affected, as in true neuralgia. We have never been so fortunate as to witness a good result in locomotor ataxy, though many such cases are recorded. At present we can only say that the evidence of Cyon will compel very serious attention to the galvanization of the cord in a variety of diseases in the stage of commencing atrophy.

We are also grateful to M. Cyon for his remarks on the so-called galvanization of the sympathetic, a subject upon which many electro-therapeutists write in a manner which must cause profound regret to every rational inquirer. Independently of the formidable dangers which, it is now well known, attend the process, independently also of the fact that it is impossible to galvanise the cervical sympathetic without affecting simultaneously the vagus, the depressor, the laryngeal, and the descending branch of the hypoglossal, he makes some pertinent remarks on the absurdity of the expectations entertained by many electricians, even supposing that they can electrify the sympathetic at will. As he says, it seems to be believed by many that galvanization of the superior cervical ganglia will affect the vascular nerves of the whole body, which is utterly erroneous: *e.g.* the vascular nerves of the upper extremity do not even issue from the cord with the motor roots of the brachial plexus, but come off from the third to seventh dorsal roots, and the vascular nerves of the lower extremity come off just below these. The cervical sympathetic has nothing whatever to do with either of these. On the other hand, the circulation in the abdominal viscera is under the dominion of the splanchnic nerve. In fact, irritation of the sympathetic in the neck can only influence the internal carotid system of vessels, the pupil, and some of the vessels of the face. An important remark which Cyon makes, is that galvanization of the sympathetic ought never to be performed in front of the neck, for the irritation of the depressor nerve, which is unavoidable, would completely neutralise the intended effect on the sympathetic.

If we desire to stimulate the vessels of the upper extremity, the proper mode is to place one electrode on the nearest point to the *dorsal* sympathetic, and the other in the axilla, the patient drawing forward the arm in question and resting the hand on the opposite shoulder, so as to draw the shoulder-blade out of the way. No vascular action can be obtained by operating on the lower cervical apophyses, as Eulenburg and Schmidt recommend.

To galvanise the vessels of the lower extremity, place one electrode next the lower dorsal vertebræ, the other on the lumbar vertebræ, or on the sciatic at its issue from the pelvis.

We cannot at present devote any more space to this book,

which, though far from complete, and though written with a tone of contemptuous superiority for which there is no warrant in the nature of its contents, will undoubtedly prove useful to a considerable number of people. We have not had time to glance at some of the more important electro-physiological questions which the author discusses, such as his (assumed) confirmation of Pflüger's doctrines of electrotonus in regard to the human subject, and certain of his explanations of the phenomena of constant currents. On all these matters we shall probably have something to say before long, in a more deliberate manner than is possible at present. We repeat our original remark, that this book smells far too much of the lamp and the laboratory, and hence can only be considered as a partial view of the great subject which it treats.

On Urinary and Renal Diseases. By WILLIAM ROBERTS, M.D., F.R.C.P., Physician to the Manchester Royal Infirmary, &c. Second Edition, revised and considerably enlarged. London: Smith, Elder, and Co. 1872.

DR. ROBERTS is a pathologist with whom an unhappy fate compels us occasionally to disagree, but he is also a most able clinical observer, and has been honourably distinguished for the honest solidity of all the work which he has put before the profession. The new edition of his highly esteemed work on *Urinary and Renal Diseases* is precisely what a second edition should be, comprising the results of a fuller practical experience, and that natural digestion and amplification of his original views which so able an author might be expected to make after an interval of eight years of active practice. Besides general additions, we find two quite new and very interesting chapters, one on suppression of urine, and one on that strange disorder, paroxysmal hæmaturia. It is not necessary to review a book which everyone will buy, but we shall just mention one small therapeutic item which so arrested our attention that we cannot but refer to it. Dr. Roberts seems to think it doubtful whether any remedy can directly control the amount of albumen excreted in chronic Bright's disease. Surely there is one remedy—the sesquichloride of iron—which does very positively effect this in many cases?

An Introduction to the Study of Clinical Medicine, being a Guide to the Investigation of Disease, for the Use of Students. By OCTAVIUS STURGES, M.D., F.R.C.P., Assistant Physician to Westminster Hospital; formerly Medical Registrar to St. George's Hospital. London: Smith, Elder, and Co. 1873.

WE hope that the generation of medical students who are now entering upon hospital practice will have the sense to buy this

capital book, and to thoroughly imbue themselves with its spirit. Dr. Sturges has no idea, we are glad to see, of fitting every student with a rigid set of rules for clinical observation: he takes the wiser course of endeavouring to open the minds of pupils to the general nature of clinical work—the sort of things that a man has to see and learn. We believe that this is just what is really wanted, and for lack of which the student goes to the bedside, in most cases, as helpless as a blind puppy. The book is full of plain practical hints; it does not talk of things in general, but of things which are constantly coming under the student's notice and puzzling him to know what to do with them. The language is clear and concise; and the size and shape of the little volume are convenient.

The Preventive Treatment of Calculous Affections, and the Use of Solvent Remedies. By SIR HENRY THOMPSON, Surgeon Extraordinary to H.M. the King of the Belgians, &c. &c. London: Churchill. 1873.

THE title of this little book, which consists of two lectures delivered at University College, is certainly very tempting. If a surgeon of Sir H. Thompson's eminence thinks that the solvent treatment of calculi has assumed sufficient importance to be worthy of such prominent notice, there is some ground for supposing that new and valuable facts have been ascertained. But we find, on reading the lectures themselves, that for stones actually formed in the bladder Sir H. Thompson only assigns a very limited use to solvents. The dilute hydrochloric acid injections in dilated bladder with urine turning ammoniacal is rather preventive than directly remedial, but is a valuable agent. And even positive uric acid calculi, while they are in process of formation, *in the kidney*, may not improbably be actually got rid of by appropriate alkaline treatment, though Sir Henry scouts the idea of alkalies doing anything for uric acid calculi actually in the bladder. By the way, we had almost forgotten to mention that, to some extent, Dr. Roberts appears to be a believer in the solvent treatment of calculus.

Clinic of the Month.

Treatment of the Convulsive Diseases of Women.—Dr. Barnes, in his Lumleian Lectures, takes up the subject of the convulsive diseases of women, and sums up his observations in the following propositions:—1. Pregnancy and labour require for their due fulfilment an extraordinary supply of nerve force. 2. The extraordinary supply of nerve force implies a corresponding organic development of the spinal cord. 3. The provision of an extraordinary supply of nerve force implies a greatly augmented irritability of the nervous centre, rendering them more susceptible to emotional and peripheral impressions. 4. The disturbances in nutrition occasioned by pregnancy almost always entail some alteration of the blood, which increases the irritability of the nervous centres, and favours the evocation of any latent convulsion or other nervous diathesis, as chorea, epilepsy, or vomiting. 5. When the blood-change wrought by pregnancy is marked by albuminuria, a poisonous action of peculiar intensity is exerted upon the nervous centres, tending to produce eclampsia. 6. Obstinate vomiting in pregnancy probably sometimes proves fatal by the development of an unknown organic or systemic morbid process. 7. Menstruation resembles pregnancy in giving rise to an exalted central nervous erethesia, and ovulation is a primary exciting cause of epileptic, vomitive, and hysterical convulsion. 8. At the climacteric age, again, there is renewed susceptibility to convulsive disease. 9. Pregnancy, by evoking or producing convulsive diseases under certain known and passing conditions, puts to the test the various theories of the pathogeny of these diseases. 10. The rational treatment of convulsive diseases in women must take into account the two great factors in the production of these diseases—namely, exalted nervous irritability under the stimulus of the reproductive function, and lowered or empoisoned conditions of the blood. In further speaking of the treatment, Dr. Barnes maintains that four cardinal principles may be laid down, namely: 1. To moderate central nervous irritability. 2. To cut off emotional irritants or excitants. 3. To cut off peripheral irritants or excitants; and 4. To eliminate all conflicting morbid conditions. He then

enters into details upon each of these points, showing how in the first case the inducement of premature labour may be requisite, or how the central nervous irritability may be diminished by chloroform, opium, belladonna, and the bromide of potassium, or by bleeding. In regard to the third indication, he thinks that dashing cold water on the face is a practice that, however useful in syncope or hysteria, should be avoided in eclampsia, and is of the same opinion in reference to mustard poultices on the calves of the legs: he points out the advantage of lulling the system by the artificial sleep of anæsthesia before passing a catheter or proceeding to any manipulative interference. He finally deals with the difficult subject of obstinate vomiting in pregnancy, and guardedly recommends the induction of premature labour and the injection of enemata of beef tea, containing brandy or port-wine, and sometimes half a drachm of chloral. (*British Medical Journal*, May 3, 1873.)

Carbolic Acid Injections in deep-seated Inflammation.—Dr. Eames, of Letterkenny, states that, having lately had under his care three very serious cases of deep-seated suppurative inflammation successfully treated by injecting carbolic acid with oil or water, he thinks it may be interesting to mention a few particulars. Two of the cases were attacked with parenchima of a violent character, extending to the tendons and bone. Having made free incisions, he injected into them by means of a large brass syringe a mixture of one part of carbolic acid in fifteen parts of warm olive oil. The immediate effect was very marked. The destructive inflammation was at once arrested. The injection was repeated three or four times, and although the inflammation had extended to the periosteum, there was no loss of tendon or bone in either case, nor was the motion of the joint impaired. In one of the cases the whole hand was affected—so much so that ten incisions were necessary to give free vent to the matter. The third case was one of inflammation of the thigh, extending to the deep-seated muscles, caused by a kick: matter formed, incisions were made, and injection of carbolic acid made as before. In this case it was dissolved in 40 parts of water. The man had become emaciated from the discharge, but rapidly improved. Dr. Eames thinks it most useful also in altering the character of the pyogenic membrane in sinuses or large abscesses. (*Ibid.*)

Treatment of Chronic Diseases of the Bladder with Injections of Healthy Urine.—Dr. T. Clemens proposes for the treatment of old disorders of the bladder (such as catarrh, chronic inflammation produced by unhealthy urine, gravel, &c.) a means which had already suggested itself to his mind four years previously, and which he has since employed with success. His first case was

that of a patient whose bladder contained abnormal urine in a state of putrefaction: after having failed in the use of all known remedies he made injections with fresh and healthy urine, and with the best results. The author advises to empty the bladder completely and to wash it out by an injection of tepid water, which is allowed to run out after five minutes. A young and well-fed individual is then made to micturate directly and slowly into the syringe, which is previously warmed to 90° Fahr. The injected urine is allowed to remain some time in the bladder. The injection must be repeated two or three times a day. Sometimes an immediate effect is observed, as happened in a case, quoted by the author, in which spasm of the bladder disappeared after the first injection. (*Lancet*, May 10, 1873.)

Recurrent Apnoea as a Cause of Sleeplessness in Cardiac Disease.—Dr. Laycock calls attention to a peculiar state which is sometimes described by the patient as stoppage of the heart, which prevents sleep. This is in reality due to an arrest of breathing, just as the patient is falling asleep, and is not only in itself exceedingly distressing, but the want of sleep induced increases the gravity of all the other symptoms, and hastens on a fatal termination. Dr. Laycock concludes from his observations that structural disease of the heart and large vessels, and a consequent interference with the circulation through the lungs, is not a necessary condition for the manifestation of this distressing breathing, but he concurs with Dr. Little in thinking that the vagus system is involved. He relates various interesting cases that he has met with, and refers to that of John Hunter, who died in a paroxysm of angina pectoris, but really of this palsy of heart and respiration. In the treatment of such cases the procurement of sleep is essential. The palliative treatment which proved successful in relieving one of Dr. Laycock's cases was the administration of five grains of the iodide of potassium and fifteen of the bromide at bed-time. In the event of this failing, Dr. Laycock had ordered fifteen minims of the liquor of the bimeconate of morphia to be administered hypodermically. He thinks a sixth of a grain of atropia may be combined beneficially with the morphia. (*Medical Times and Gazette*, April 26, 1873.)

The Treatment of Transverse Fracture of the Patella by Sansom's Method.—In a paper read before the Surgical Society of Ireland, Mr. Stokes agrees with most surgeons in believing that the patella never breaks transversely except when the knee is flexed, and that muscular contraction is usually the cause of the injury. The separation of the fragments which *immediately* takes place proves that an extreme and violent contraction of the extensor muscles of the leg existed at the moment the accident occurred; but, as Mr. Hutchinson has already pointed out

in a paper in the "*Medico-Chirurgical Transactions*," the separation is not maintained by muscular action, since, a day or two after the accident, the quadriceps will be found soft, flabby, and perfectly at rest. What, therefore, is the cause of the continued separation? Cloquet and Astley Cooper showed that the great effusion which immediately takes place after the occurrence of this accident is due, not so much to any inflammatory product as to a hæmorrhagic weeping or effusion from the broken surface of the fragments. This effusion acts in another way, in preventing, namely, firm bony union, the broken fragments being kept in a kind of bath, which the surgeon has not the power to empty at once, unless he were to adopt the practice of tapping the knee—an unwarrantable proceeding, which has been followed by disastrous results. Another cause of difficulty in obtaining bony union in these cases is that only one side of the bone possesses an investment of periosteum, which must necessarily be torn at the time of the accident. These conditions being the chief agents in preventing or retarding union, the method of treatment which would efficiently keep the fragments in fair apposition without making any constricting pressure above, below, or at the sides of the joint, would have a twofold advantage; one being to enable the surgeon to apply during the treatment means for promoting absorption of the effusion, and the other to avoid making such pressure, either laterally or from above, as would force the fluid between the broken fragments of the bone. Mr. Stokes then reviews the action of Malgaigne's method, which he thinks of doubtful value, since the pain is in some instances unendurable, whilst in others it has led to bad results. Sansom's plan he considers to have great advantages over Malgaigne's method, in its cheapness, simplicity, and the absence of all pain or risk to the patient. In adopting this plan the limb should be extended and the foot slightly raised; a long strip of plaster is then placed along the anterior aspect of the limb, extending from the middle of the thigh down to the middle of the leg. This is to be firmly fixed by rollers. A loop of plaster is left over the situation of the fracture, and over the upper margin of the superior fragment of the patella a small pad made by a narrow roller is placed. A piece of stick is now placed underneath the loop and twisted, and by thus shortening the loop the roller pad makes pressure on the upper portion of the patella, approximating it to the lower fragment. Mr. Stokes gives the details of two cases which were successfully treated by this eminently safe and simple means. In the discussion which followed the reading of the paper, Mr. Stapleton said he had used with success simply a piece of sticking plaster and a pad. He did not think the effusion was due to a weeping of blood, but to serous effusion. Mr. Ormsby,

Mr. McDowell, and Mr. Croly all spoke favourably of Malgaigne's books. (*Medical Press and Circular*, April 16, 1873.)

The Administration of Phosphorus in Neuralgia.—Dr. E. Slade-King, of Ilfracombe, in a paper on this subject in the *Medical Times and Gazette*, states that phosphorus is frequently referred to as a drug which may be given under certain circumstances, seldom as having been given. It is not convenient to dispense, its peculiar odour is disagreeable to most persons, and betrays its presence in prescriptions. In this country it is rarely employed. When administered internally it is most likely decomposed into phosphoric acid, phosphuretted hydrogen, and phosphorous acid. In large doses it is an irritant poison, producing violent thirst, vomiting, inflammation, and mechanical disorganization of the mucous tissue. In medicinal doses it increases the frequency of the pulse, raises the temperature of the surface, increases the flow of urine (in which its presence is soon detected), and generally produces perspiration, if continued. In single doses its effects soon pass, and are not followed by any marked reaction. He carefully selected some cases of neuralgia in which to try its effects, excluding those in which there was any defined source of irritation, an admixture of rheumatism, or a marked periodicity of recurrence; taking cases of pure neuralgic pains for which no adequate cause could be discovered, and more particularly tic douloureux and hemicrania. The dose of phosphorus should not exceed one-twentieth nor be less than one-thirtieth of a grain, to be repeated until an entire grain is taken in all. If the pain is not then greatly relieved or cured, it is of no use to push the administration of the drug any further. The absorption of phosphorus into the blood is rapid, and its effects transitory in the extreme. The best mode of administration in neuralgia is in minute but frequent doses, commencing with the one-twentieth or one twenty-fifth of a grain every two hours. The patient must partake of a little mucilaginous or farinaceous nourishment some ten minutes previous to each dose. When eight doses have been taken in this manner, increase the interval between each dose to four hours, and finally to eight hours. Used in this way, Dr. Slade-King has found it most successful in its results, and has not noticed any unpleasant effects. Its action for good has been more rapid than any drug which was not narcotic or anodyne, and its results lasting in most cases. He would venture to suggest its employment in cases of snake-bite, and feels sure, if tried for that purpose, or, as has been suggested in German practice, to promote the reappearance of the eruption in some of the exanthemata, when this from some cause has receded from the skin, or when it is requisite to combat intense nervous

prostration, it will be found that its success will depend on its being prescribed in small, frequent, equidistant doses, gguardin the stomach by the administration of bland nourishment in the manner above mentioned. The administration of phosphorus in the solid form is neither convenient in dispensing nor safe to the patient; its solution in ether is open to the objection of the smell, which cannot be avoided, and to its easy precipitation—which defect may, however, be easily met by adding it to equal parts of mucilage and syrup. It is in this form he has been compelled to prescribe it, not having been fortunate enough to procure the solution in superheated oil of sweet almonds, recommended by Méhur, which when enclosed in capsules would be the most convenient formula.

The Value of the Differential Stethoscope.—Dr. George Carrick gives a drawing of the differential stethoscope constructed by Dr. Cammann, of New York, which consists of collecting the sound from *one* point and then conducting that sound to both ears, and contrasts it with the differential stethoscope of Dr. Scott Alison, which consists of two stethoscopes with flexible tubes that may be applied to *opposite* or *different* points, and gives his verdict decidedly in favour of the latter. He points out its great value in determining the intensity of respiratory sounds, as well as in demonstrating the relative loudness of the thoracic voice, enabling by these means a diagnosis to be formed with a certainty unattainable through any other instrument. In diseases of the heart it enables the systolic to be distinguished from the diastolic murmur, in those cases where—from the irregularity of cardiac action, or from the second sound being heard at the apex only, and the first at the base only, or from the second sound being indistinct at the base, or from the first sound being indistinct at the apex—it is impossible to separate the two cardiac sounds. Nevertheless, he admits that all cardiac sounds, so far as loudness and clearness are concerned, are best heard with the ordinary wooden stethoscope. (*Edin. Medical Journal*, April 1873.)

Case of Renal Abscess with contained Calculus successfully relieved by Operation.—Mr. Annandale gives the details of an interesting case which he attended with Dr. Dewar. The patient had suffered a year from obscure lumbar pains, and for six weeks from gastric and renal derangement, which gradually increased, with pain in the region of the kidney, shooting down to the groin, nocturnal fever, and sweating. Tenderness and fulness were noted over the lower half of the right kidney; but there was no fluctuation, and the introduction of a fine trocar and canula into the right lumbar region gave no result. Three weeks afterwards deep fluctuation was believed to be felt,

and an operation was decided on. Under chloroform an incision was made in the situation and direction of that required for ligature of the common iliac artery, and after some dissection a cavity was opened on the outside of the peritoneum, and a discharge of very offensive pus took place; a small calculus was then felt, seized with forceps, and extracted. The cavity was sponged out with a solution of sulphurous acid, and the edges of the abdominal wound were brought together with sutures; a free opening, however, being left below for the escape of pus or other fluids from the cavity. The operation gave great relief to the patient, and his progress was most satisfactory up to the fifth day, when for the first time a small quantity of thin feculent matter was noticed to pass by the wound. There was some pain in and swelling of the abdomen, with an increase of pulse and temperature. These symptoms passed off, after the removal by Dr. Dewar of a large quantity of hard fecal matter which was obstructing the rectum, and the patient made a complete recovery without any further drawback. (*Edin. Medical and Surgical Journal*, April 1873.)

Extracts from British and Foreign Journals.

Treatment of Diabetes by Arsenic.—MM. Devergie and Foville (*filis*) observe that one of the less doubtful conclusions that the numerous researches directed to the elucidation of diabetes have established is, that the nature, origin, and course of this disease are by no means always identical. Nevertheless, in practice there are certain remedies which are rarely unserviceable at one period of the disease or another; such are the deprivation of farinaceous food and the administration of alkalies. The first of these means, systematised by Bouchardat, is no doubt extremely valuable, but is at the same time so irksome to the patient that he is often apt to transgress the strict rules laid down for him, preferring the disease to the remedy. However varied and seductive may be the long list of meals permitted by M. Bouchardat, the patients for the most part soon sicken of them and feel acutely the loss of bread, which is but ill supplied by the preparations of gluten, albumen, and almonds. Up to the present time but few efforts have been made to cure the disease by attacking its cause, and none have taken a prominent place in practice. They venture to suggest the employment of an arsenical treatment, which has the effect of suppressing the sugar in the urine, or at least of effecting a considerable reduction in its quantity. About twelve years ago, one of them (M. Devergie) was led to adopt the use of arsenic from its accidental success in the case of an old woman suffering from pruritus pudendum, and who had been reduced to sleeping with a bladder of ice on the pubes and vulvæ to relieve the distressing itching. Various remedies had been used, when it was discovered that she was suffering also from diabetes. M. Devergie then prescribed arsenical preparations, and, to his surprise, not only effected the cure of the pruritus, but also a great diminution in the glycosuria. From this period M. Devergie has had numerous cases in which he has satisfied himself of the good effects to be derived from this plan, even in cases where no restrictions were laid upon the diet. (*La France Médicale*, March 19, 1873.)

Treatment of Rheumatism by Propylamine.—As long ago as 1859 propylamine was recommended by Dr. Awenarius, of
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St. Petersburg, as a means of treating rheumatism, and found so successful that he regarded it as almost a specific for this disease. Propylamine is an artificial alkaloid obtained from cod-liver oil, ergot, and *Chenopodium vulvaria*. It is a kind of ammonia, exhaling a penetrating and powerful odour of stale fish. M. Awenarius gave it in twenty-four drop doses disguised with some flavouring and aromatic fluid; and the same mode of exhibition is adopted by M. Dujardin-Beaunetz, who has just brought it again before the notice of the Société Médicale des Hôpitaux. This particular remedy appears to have led to extremely good results in the hands of Dr. Gaston, of Indiana, and has been somewhat extensively used by Dr. Dujardin-Beaunetz. Propylamine, which is isomeric with trimethylamine, dissolves perfectly in water. The prescription M. Awenarius used was—

R. Propylamine, 24 drops.
 Distilled water, 180 grammes.
 Oleo-saccharate of peppermint, 8 grammes.

Whilst M. Dujardin-Beaunetz recommends—

Propylamine, 0·50—1·50 gramme.
 Eau de tilleul (lime-tree), 120 grammes.
 Syrup of morphia, 30 grammes.
 Essence of aniseed, q.s.

The morphia may be left out. Dr. Gaston found that in acute cases the pain and fever often disappeared in twenty-four, and that the symptoms were almost always greatly ameliorated in from thirty-six to forty-eight hours. M. Dujardin-Beaunetz has used propylamine in six cases of acute and one of chronic rheumatism, and recovery was complete in each case between the third and tenth day. The more acute the case and the earlier the remedy was used, the better was the result. At present the high price of propylamine is too high for general use. (*Journal de Médecine et de Chirurgie*, 1873, No. 2.)

Maltine.—Dr. Benoist remarks that the digestion of farinaceous food takes place through the agency of a special ferment called diastase; in animals this diastase is found in the saliva, and in vegetables in the juices of grain, where it is known under the term *maltine*. The chemical composition of these two forms of diastase is identical, and it is therefore reasonable to suppose that maltine might supply the place of salivary diastase and be efficacious in the dyspepsia characterised by insufficient digestion of amylaceous food. Experiment has shown that this is correct. In a remarkable work on dyspepsia and the artificial digestion of feculent substances, M. Coutaret has shown that

maltine causes artificial digestion of all amylaceous substances with extraordinary rapidity, and he has at the same time constructed a table showing the relative digestibility of each of these kinds of food. M. Gerbay, an intelligent pharmacist, has made a preparation of maltine in pastilles, which constitute an exceedingly useful remedy in all the diverse and variable forms of dyspepsia. (*La France Médicale*, March 22, 1873.)

Local Employment of Chlorate of Potash in Cancerous Sores.—Dr. Burow, of Königsburg, advocates the local employment of chlorate of potash in the treatment of cancerous sores. His proceeding consists in sprinkling the sore with chlorate of potash in powder or crystals, and covering the whole with a wet compress. As the crystals of chlorate of potash exert a more powerful action than the powder, and excite greater pain, Dr. Burow uses the powder first, and replaces it by the crystals when sensibility has been abated. One of the cases was a cancerous sore of the left arm, which healed completely after eight weeks' treatment. Three other cases were cancerous sores of the breast: one was lost sight of; the other two are under treatment, and healing well. The fifth case recorded was connected with a cancer which originated in the periosteum of the upper jaw and left cheekbone, and there became ulcerated; in this case healing was complete in three months. (*Berlin Klin. Wochenschrift*, No. 6, 1873.)

Treatment of threatened Abortion by Hypodermic Injections of Morphia.—Dr. Isham, of Ohio, has preserved records of seven cases of menaced abortion, in all of which there existed forcible uterine contractions, hæmorrhage, and dilatation of the os. In every instance the uterine contractions and hæmorrhage were arrested, and the os contracted from the administration of morphia by the mouth and hypodermically, in full doses and at short intervals. In four cases the patients went on to full term, and gave birth to fully developed children. In the three unsuccessful cases, expulsion occurred in from three days to two weeks. In two of these cases there was fœtor of the discharges on the first examination, so that they may be excluded from the series as almost hopeless. Most of the advocates of opium advise its administration by the rectum. This is likely, because the irritable stomach so common in cases of threatened miscarriage may not tolerate opium, but the small measure of success may perhaps be attributed to the mode of administration. It is well known that medicaments introduced into the rectum act in a very uncertain manner, and it will be readily seen how opium or its alkaloids given per orem to a patient vomiting and retching might fail to avert a miscarriage. Just when these means have failed and will fail

again, Dr. Isham thinks the hypodermic injections would prove invaluable. In addition to calming uterine action, it fulfils other indications, its influence spreading over the brain and ensuring rest to the whole system. (*Hay's American Journal*, Jan. 1873.)

Antiphlogistic and Antipyretic Medication.—Dr. Bouchut, of the Children's Hospital in Paris, contributes a vigorous article to the *Bulletin Générale de Thérapeutique*, contrasting modern and now somewhat antiquated methods of treatment, and not saying much in favour of the latter. In philosophy and in science, as in the ordinary affairs of life, he says, fashion exerts a powerful influence, and it would not be difficult to mention instances where remedies of known and proved value have been abandoned for others having analogous but much feebler powers, merely for the love of change. Too many of us imagine that what is new must be good, though abundant evidence might be drawn from the experience of the last few years that medicines recently introduced either possess no novelty in their mode of action, or that this is inferior to others already in our possession. For some time the more active antiphlogistic and antipyretic remedies have been singularly discountenanced, and have been replaced by others much less powerful. Thus, emetics and bleeding, so vaunted by Hufeland that he regarded them as constituting, with opium, the basis of all therapeutics, are never now employed; the former on account of accidents that those who are familiar with their use may well call imaginary, the latter because in the younger school of medicine scarcely anyone knows how to hold a lancet. Having some time ago to order a patient to be bled, M. Bouchut found none of his pupils were able to perform the operation except a young Italian. What remedies are used instead? Digitalis, veratria, quinine, frequent cold baths. Are these, he asks, superior, or even are they equal? To answer the question the effects of both must be compared. Bleeding lowers the temperature from 1 to 3° C. in a few hours, which demonstrates its antipyretic power; it diminishes the arterial tension by facilitating the peripheric circulation; it diminishes the pulse by from ten to twenty pulsations per minute; and, in fine, practised at the beginning of an angina or simple pneumonia, it arrests the progress of disease. No other remedy produces similar effects, and, putting aside putrid and septic diseases, it is superior in its action in purely inflammatory affections to all other remedial means. Emetics have a similar action by the gastric and intestinal evacuations that they occasion. Their effects on fevers and inflammation are rapid. They, too, lower the temperature and the frequency of the pulse, though, were Marcy's theories correct, by contracting the peripheric vessels, they should increase the frequency

of the pulse. No doubt the new remedies, digitalis, veratrum, quinine, bryony, and cold baths, are not to be wholly despised; they lower the fever, and make the temperature fall from 1 to 3°. Their action, too, is in this respect sufficiently prompt, but they do not diminish the arterial tension with equal rapidity, and only slow the pulse at the expiration of two or three days. They never have the antiphlogistic effects of emetics and bleeding. They never strangle a disease. Their inferiority as abortives is obvious, and he maintains that at the beginning of a pneumonic attack, of rheumatism, of angina, or typhoid fever, he has not obtained the same success with them as with an emetic or from the emission of blood. They may be employed with great advantage after emetics or venesection, but the immediate and substantial advantages of these last should not be overlooked. (*Bulletin Générale de Thérapeutique*, April 15, 1873.)

Fatal Effects of Injection of Perchloride of Iron into the Larynx.—A young woman, suffering from a tumour which had been diagnosed by means of the laryngoscope to extend from the right side of the cricoid cartilage into the interior of the larynx, was treated by Dr. Coen by the introduction of the capillary needle of a syringe and injection of some perchloride of iron. Unfortunately a few drops escaped, and caused so intense a spasm of the glottis that death ensued instantaneously, notwithstanding that laryngotomy was immediately performed. The autopsy, conducted by Rokitsansky, showed the heart contracted, with a little fluid blood in its cavities, the lungs emphysematous and cedematous, fluid blood in the trachea and the larger bronchi, two small wounds made by the injection in the posterior wall of the trachea; two tumours, gelatinous in appearance, in the trachea, one being situated on the anterior wall, the other on the posterior wall of the first ring, rounded, pale, about five lines in diameter, and almost filling the cavity of the trachea immediately below the larynx. The surrounding mucous membrane was of dirty yellow colour. On examination the tumours were of a sarcomatous nature. Notwithstanding the acquittal of the operator and the justification of this mode of treatment by others, the case furnishes a useful caution, and shows that great care is requisite in the performance of such an operation. (*Union Médicale*, No. 20, 1873.)

Ice in the Rectum in the Treatment of Narcosis of Chloroform.—According to Dr. Baillée there is no more energetic means of overcoming the narcosis produced by chloroform than the introduction of a small portion of ice into the rectum. It can be pushed through the sphincter without the employment of much force. It immediately melts, producing

a deep inspiration which is the precursor of natural respiration and the re-establishment of cardiac functions. M. Baillée recommends the same plan to be pursued in cases of apparent death in new-born infants. (*Bulletin Générale de Thérapeutique*, April 15, 1873.)

Intermittent Fever in Chronic Phthisis and Chronic Lung Tuberculosis.—Dr. Dührssen describes several cases of chronic tuberculosis of the lungs in which a distinctly intermittent type of fever occurred, with great difference between intermission and exacerbation. In no instance was a large portion of the lung undergoing softening, nor was intercurrent inflammation present that might account for the febrile state. Dr. Dührssen believes that such intermittent fever, when it occurs, results from the absorption into the blood of the foreign matter of the infiltration at the apices of the lungs. The febrile symptoms commonly present both in phthisis and tuberculosis pulmonum have repeatedly a more or less intermittent character, but the symptoms are then due to intercurrent inflammation, and the type of fever is not of a very regular character; in particular, the difference of temperature between intermission and exacerbation is smaller, and the period of intermission is shorter, whilst the difference in the frequency of the pulse and of the respiration is certainly smaller. If in the course of chronic phthisis a new inflammatory centre forms, the febrile symptoms that are produced by it are either accompanied by a higher temperature during the exacerbation, if they be remittent, or, if intermittent, by a lower temperature. The febrile symptoms disappear with the arrest of the inflammation. From his observations Dr. Dührssen has arrived at the following conclusions:—1. If an intermittent fever of regular type occurs in the course of a chronic phthisis, and certain accidental diseases can be excluded, we are justified in concluding that the resorption of the caseous products with their further products has taken place. 2. If a typical persistent intermittent fever occur at the commencement or in the course of pulmonary disease, the diagnosis of which last has hitherto been doubtful, and if anti-periodic remedies have only a slight and transitory influence, the disease in question is of a tubercular nature. As remedial means in such cases, Dr. Dührssen recommends pure air, good diet, moderate doses of alcoholic fluids, and large doses of quinine. (*Medizinisch-chirurg. Rundschau*, April 1873.)

Cure of Gonorrhœa in the Male by the Inhalation of Ethereal Oils.—A paper with this heading appears in the Viennese *Medizinische Zeitung*, by Dr. H. Zeissl, who states that the passage of the ethereal oils, and especially of turpentine, into the urine, after they have been respired, as shown by the

odour they communicate to it, has long been known; nevertheless, it has lately been suggested that the benefit derived from the administration of the balsamic remedies is due, not to the oils, but to the resin these contain; and Weikart and others have prescribed with a certain amount of success the resinous acids. Zeissl, imagining that perhaps the greater part of the ethereal oils passed from the body with the diarrhoeic discharges they produce, made several of his patients breathe the oil by means of a chloroform apparatus surrounded with hot water. He obtained, however, no positive results in this way, either from a curative or chemical point of view, and he was consequently inclined to agree with Weikart that the ethereal oil was in part excreted with the fæces, and partly converted into carbonic acid and water, and as such discharged from the system. Very recently, however, he met with the observations of Dr. Leopold Dittel, who has obtained much advantage from the inhalation of the ethereal oils in pyelitis and renal catarrh, who used an ordinary chemical drop-bottle provided with two perpendicular glass tubes. To the outer opening of the one tube a caoutchouc tube a yard or more in length was passed, for the sake of convenience. Dittel's results led Zeissl to repeat his experiments. His first case was a man, aged 30, suffering from a severe attack of gonorrhœa. The day after his admission into the hospital, on the 18th of February, he commenced the inhalations in the above mode. On the following day the urine had a distinct smell of violets. The inhalations were continued for a fortnight in the morning and at night without any inconvenience. The purulent secretion retained its characters to the 4th of March, when it suddenly diminished in quantity. There was no loss of appetite or other indication of the action of the medicine, and on the 14th of March he was dismissed perfectly well, the whole cure having lasted twenty-five days. During the treatment the urine constantly retained its violet odour, reacted strongly acid, but showed no other perceptible change, its specific gravity remaining unaltered. In another case of severe gonorrhœa, instead of the ordinary turpentine of the shops the more volatile *oleum æthereum pini*, which makes its appearance still more rapidly in the urine, was employed. Here, however, no results were obtained in eighteen days, beyond a diminution in the amount of secretion; on the whole, the plan does not seem a very promising one, whilst the cost is considerable, and therefore scarcely applicable to the out-patients of an hospital. (*Allgemeine Wien. Med. Zeitung*, April 22, 1873.)

Treatment of Incarcerated Hernia by Injections of Morphia.—Dr. Alois v. Szatyory, of Lak, states that three successive cases of incarcerated inguinal hernia, which in his

hands had yielded promptly and without difficulty to the subcutaneous injection of morphia, have impelled him to bring the plan under the notice of his brethren. In the first case to which he was called, the patient had endured the pain for many hours: the extremities were cold, the pulse small, and vomiting, hiccup, and great distress were present. The man was at once placed in a hot bath, and reduction of the hernia attempted by the taxis for three-quarters of an hour in vain. Szatyory determined to perform herniotomy, but before proceeding to this extreme measure he thought it expedient to inject five drops of a morphia solution (1--30) subcutaneously near the canal. After a few minutes he again made an attempt at reduction, and was gratified to find that the intestine wholly returned with the usual gurgling noise. The two other cases were both examples of left inguinal hernia, and both yielded readily to the same means. (*Allgemeine Wien. Med. Zeit.* April 22, 1873.)

The Pathology and Treatment of Hooping Cough.—Dr. Rudolf Meyer remarks that amongst all the diseases of the respiratory organs, none appear to have benefited less from the advances of modern pathology and therapeutics than hooping cough. Its nature and treatment are not much better known now than they were centuries ago. This is partly owing to the difficulties attendant upon the investigation of disease in very young patients, especially in regard to laryngoscopic examination, partly to the general feeling amongst practitioners that little is to be gained from such investigations. Many are still unable to use the laryngoscope, whilst they think it would be scarcely worth while to ask for the assistance of a skilled laryngoscopist. There are surgeons who regard hooping cough as a neurosis, and seek only for some remedy having an antagonistic action. Others, acknowledging its incontestable contagiousness, prescribe quinine, the indispensable remedy for all contagious affections; whilst there are some sceptical nihilists who do nothing, and expect benefit to accrue from change of air alone. Dr. Meyer proceeded to examine the literature of the subject, and shows that in the works of Rühle, Friedreich, Türk, Lewin, Semeleder, Tobold, Schrötter, Navratil, Mandl, Waldenburg, and Biermer, either no, or only the most cursory, mention of the disease is made, since it is not generally considered as belonging to the class of diseases recognisable with the ophthalmoscope. In 1870 Dr. Meyer himself suffered from a severe attack of hooping cough, which he caught in Paris. Five days after exposure, and after his return to Zürich, he thought he had a feverish cold. After fourteen days he was worse, with unpleasant sensations in the mucous membrane of the deeper parts of the pharynx and about the entrance of the glottis. Sneezing occurred frequently,

with frequent dry cough. This last came on directly he laid down, and recurred every quarter of an hour; whilst during the day there were often intervals between the attacks of coughing of an hour or more. The cough became more and more spasmodic, and after a time a little clear gelatinous mucus was expectorated; and the attack was brought on by swallowing a little beer or wine, or by exposure for a short time to the fumes of tobacco. He at length determined to make an auto-laryngoscopic examination, which he effected on a bright sunny day satisfactorily enough by a suitable disposition of mirrors, and he found the mucous membrane of the superior orifice of the larynx swollen and hyperæmic. The upper surface of the epiglottis was but little altered; the inferior was redder than natural. The most remarkable feature, however, was that the arytenoid roll or cushion was bright red, as was also the mucous membrane between the arytenoid cartilages above the posterior commissure of the vocal cords. The above-mentioned highly glandular and vascular parts were much swollen, and always quickly became covered with a smooth or minutely frothy secretion. The vocal cords, both true and false, were quite natural. The parts of the pharynx in the neighbourhood and on the level of the entrance to the glottis were distinctly swollen and inflamed, highly sensitive to the touch of the sound, and covered with a tenacious mucus. He was not able to examine the trachea any deeper, or to practise auto-rhinoscopy. The discovery of these conditions led him to adopt local treatment, and with this object in view he used the glass insufflator of Schrötter, which he connected with a caoutchouc tube and ball, and blew in with them three or four times a day about fifteen grains of powdered alum. Soon a pleasant improvement occurred: the sensitiveness of the throat diminished, the attacks of coughing became less and less frequent and spasmodic, and in the course of ten or twelve days all the symptoms had vanished. Shortly afterwards another case came under his observation in a lady of forty years of age, in whom the existence of the same conditions were substantiated by laryngoscopic examinations. The patient was unable to employ alum in the pure state, on account of the violent retching it produced, but she was cured by the injection of weak solutions of tannin and alum and the exhibition of alkaline mineral waters. From these observations it would appear that the superior laryngeal nerve is that which is essentially affected, that the disease is a local disease of an inflammatory nature, affecting the entrance to the glottis and the adjoining parts of the larynx, and that it may be successfully treated by local means combined with judicious general measures. (*Correspondenz-Blatt für Schwecizer Aerzte*, April 15, 1873.)

Treatment of Intermittent Fever with Carbolic Acid.—

M. Déclat desires again to draw the attention of the profession to the advantage to be derived from the treatment of intermittent fevers by means of carbolic acid, which he some time ago recommended on the strength of the excellent results he has obtained in twenty new cases of a very severe and obstinate nature. He injected subcutaneously seventy-five drops of a one per cent. watery solution of carbolic acid four times on the first day, three times on the second, and twice on the third day. The first injection, in general, effected a cure, but it was repeated to prevent any chance of relapse, and with the same object he continued to direct the patient to take small doses—0·2 to 0·5 of a gramme (3 to 7 grains)—of the acid by mouth daily for a few weeks. (*Comptes Rendus*, lxxv. p. 1489.)

Acute Dilatation of the Stomach.—Dr. Hilton Fagge gives the details of a series of cases of an affection to which he applies the above term to distinguish it from other forms of disease—such, for instance, as that dilatation which occurs slowly without obstruction of the pylorus, and that which accompanies pyloric or intestinal obstruction. In all cases, however, Dr. Fagge thinks that the diagnosis can be materially aided by freely exposing the abdomen and watching for peristaltic movements, which may be then easily recognised, though they may be undistinguishable if the hand be merely laid on the abdomen under the bed-clothes. The special cases to which he calls attention he believes chiefly occur in young subjects; the dilatation produces no symptoms at first, but when these occur they are sudden in their onset, of great severity, and may rapidly prove fatal. The dilatation of the stomach itself may be the only disease found in the body after death, or it may have supervened upon some other morbid change in the alimentary canal. The signs of the disease are a rapidly increasing and unsymmetrical distension of the abdomen; a surface marking corresponding to the dropped-down lesser curvature of the stomach, extending from the left hypochondrium obliquely to the umbilicus, the line appearing to descend with each act of inspiration; the presence of fluctuation and of a splashing noise or manipulation of the distended part of the abdomen; and the presence of a tympanitic note over a large part of the abdomen when the patient lies on the back. The symptoms are those of severe abdominal disease without evidence of peritonitis or lesion of the intestines, vomiting, confined bowels, scanty urine, and facies Hippocratica. Post-mortem examination shows the stomach greatly dilated, yet on escape of its contents returning to its natural size, and exhibiting no lesion beyond slight lacerations of some of its coats. In regard to treatment,

the stomach-pump should be used, and the contents as far as possible evacuated, when there is reason to believe life may be saved. (*Guy's Hospital Reports*, vol. xviii.)

Koumiss in Tuberculosis.—Dr. Pogacznik, of Vienna, maintains that tuberculosis is under *all* circumstances the result of the action of debilitating agents on the organism, and can only be cured or prevented by improving the nourishment, and for this purpose he thinks that the so much vaunted koumiss is by no means well adapted. He appeals to the practical physician, and also to the bio-chemist, as to the kind of food which is found most suited for extremely debilitated invalids, and contends that it is meat and egg food, with wine and beer; whilst in the case of milk and koumiss far too much in quantity has to be taken before the requisite amount of protein is consumed, so that patients often complain of headache, want of appetite, and gastric derangement. (*Allg. Wien. Med. Zeitung*, April 8, 1873.)

Treatment of Constitutional Syphilis.—Mr. John St. S. Wilders takes the hopeful view that constitutional syphilis is as certainly curable as ague, though months, or even two years, may be required to eradicate it. He thinks that in at least one-half of the cases under his care in which syphilis has assumed the tertiary form, it is owing to the fact that patients have become tired of the treatment in the secondary stages, and have either given it up altogether or have fallen into the hands of quacks. Mercury is, like fire, an excellent servant but a dangerous master, and may, if ignorantly prescribed, not only effect no cure, but do much harm. In many instances when, from shortness of work or other privation, debility is produced, its use should be intermitted and tonics given. The order of symptoms after infection is thus given by Mr. Wilders:—Induration of inguinal glands; then, about six weeks after, pains in various parts of the body, and general malaise; then in succession a rose-coloured rash, throat affections, tubercular eruption of the skin, scaly eruptions, or pustular eruptions, or rupia, iritis, onychia, and myringitis; finally, gummatous deposits, which may invade any part or tissue of the body, and leucocythæmia. In regard to treatment, in the early stages of the secondary disorder all stimulating and alcoholic drinks should be avoided as far as possible, and this especially if the patient is being submitted to any mercurial treatment. Plenty of milk, eggs, vegetables, and little animal food should be taken, with large quantities of diluents to keep the skin and kidneys in active operation. Great cleanliness should be practised, the pores of the skin being kept open by occasional hot baths, the use of the flesh-brush, and active exercise. In the later stages of the secondary

and in the tertiary period a generous mode of living is required. The best therapeutic agent for all the early stages of the secondary period, and even for some of the later, is the mercurial vapour bath, which should be given every day for five or six days, then every third day, till the patient has had a dozen. An interval of six weeks or two months may now be allowed to elapse, when iodide of potassium or other remedies must be commenced and steadily persevered in. The mercurial preparations Mr. Wilders employs for the baths are the bisulphuret of mercury, the biniodide, the grey oxide, and the iodide. They may be used singly or in combination with one another. The bisulphuret, combined with the grey oxide in the proportion of four drachms of the former and two of the latter, he has found very useful in the treatment of the various forms of skin affection and in mild attacks of sore throat. For the treatment of syphilitic disease of the bones and in syphilitic sarcocele the iodide of mercury is very valuable. This should be used together with the grey oxide, fifteen grains of the former and two drachms of the latter. The effects of the bath may require to be supplemented by rubbing into the skin blue ointment or by the internal use of some preparation of mercury, and for this purpose he recommends the following prescription, which was a great favourite with Mr. Langston Parker:—

R. Hydrarg. biniodi gr. iij.
Potass. iodidi ℥ij.
Spirit. vin. rectificati ℥j.
Syrupi zingiberis ℥ij.
Aqua destillata ad ℥xij.

M. ft. mist. Half a tea-spoonful to be taken three times a day in a little water.

Of the iodide of ammonium Mr. Wilders has had little experience. The potassio-tartrate of iron he finds a better hæmatic than the iodide. Dilute nitric acid is valuable when all the outward manifestations of syphilis have been removed by the use of mercurial baths, when it serves to renovate and brace up the patient's strength. Phosphoric acid is to be preferred when there is much nervous depression; opium is most valuable in cases of tubercular ulceration, and in bad cases of rupia where the bones are affected. In the later stages, iron, cod-liver oil, and tonics are required. (*Birmingham Medical Review*, No. VI., 1873.)

The Treatment of Rheumatic Arthritis.—In an Italian journal under the management of Professors Ghinozzi, Burresi, Landi, and Corradi, called *Lo Sperimentale*, published at Florence, is a paper by Dr. de Cavazzani, in which a good historical review

is given of the various means that have been at different times employed for the cure of rheumatism, and a series of cases recorded in which great benefit was obtained from the subcutaneous injection of sulphate of atropine. In one case the patient, a lady previously in good health, was affected with polyarthritis rheumatica. Bleeding and leeches were employed, and she became anæmic. Iodide of potassium, bicarbonate of potash, and other remedies were employed in turn. A relapse occurred, the joints affected being the shoulders, elbows, carpus, knee, and tarsus. The pulse was 160 in the minute, respirations short and rapid, all the symptoms of high fever were present, and she had most violent clonic convulsions. Not knowing exactly how to meet these formidable symptoms, Dr. de Cavazzani injected twelve drops of a solution of neutral sulphate of atropine, containing about $\frac{1}{14}$ grain in fifteen drops of water (7 centigrammes in 1 gramme). In a few minutes great improvement was observed. The pulse fell to 150, then to 140. The injection was repeated in the course of half an hour, when sleep for two hours was obtained. On the following day the pain was materially alleviated, and the articular swelling had diminished. He then injected seventeen drops of the same solution, but this caused mydriasis and hallucinations. The injections were continued for a few days, when the cure was complete, and she had no relapse. (*Lo Sperimentale*, anno xxv. tomo xxxi. fascicolo 1.)

Treatment of Chronic Granular Conjunctivitis by Galvanisation.—Dr. Trueheart states that the use of electricity in the treatment of chronic granular conjunctivitis was suggested to him by observing during recent studies in the wards of the celebrated electro-therapeutist, Professor Benedikt, of Vienna, its wonderful power and efficacy in producing absorption of adventitious formations in other parts of the body. He selects the galvanic rather than the faradaic current, because with the former greater molecular activity and catalytic force can be excited, and with less pain to the patient, than with the latter. In carrying out the experiments he was careful to select only well-marked cases, and such as had not sustained a loss of tissue by the application of strong caustics. In sending the current through the upper lid, the one electrode is to be placed just above the middle of the eyebrow; for the lower lid, just over the maxilla molar articulation; the other electrode, tipped with a piece of delicate sponge or the hair out of a camel's-hair pencil, is to be brushed lightly and slowly over the diseased conjunctiva of the everted lid.

The electrodes should be kept well moistened. Dr. Trueheart believes it to be a matter of no moment as to the relative positions of the negative and positive poles. The strength of the

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current and to be regulated by the patient's sensations of pain and heat, or by the galvanometer or the number of elements used. The application of each sitting should be continued for from ten to half an hour, according as the patient can bear it. For the most sensitive, especially where the patient is very sensitive, only a weak current should be used, and the electrodes applied to the inner margin of the closed lids just over either canthus. Indeed, Dr. Trevelyan thinks it will in most cases be found best to apply the electrodes to the closed lids for the latter part of every sitting as the application to the everted lids becomes quite painful and continued for more than ten or twelve minutes. Three to five sittings on consecutive days, will usually serve to excite a sufficiently active inflammatory reaction to set in motion the absorption of diseased materials. A pretty vigorous reaction having been initiated the sitting should be discontinued for three to six or eight days when the artificial inflammation having subsided the sittings are again to be resumed as before. Penicillating the conjunctiva daily with a two-grain sol. of arg. nit. in the intermissions of the use of the electricity, seemed to act very well. The shrinkage of the hypertrophied papillæ and the indurated subconjunctival tissue following each series of sittings was very marked. In one very severe case of nearly two years standing, where the thickening of the lids was such as to ensure decided gonitis of both eyes, eight sittings within a period of twenty days caused an improvement of fifty to seventy-five per cent. (*New York Medical Record*, Dec. 16, 1872.)

Notes and Queries.

SPHYGMOGRAPHIC TRACINGS.—We have received the following from Dr. G. M. Lowe, of Lincoln :—

“Mr. T. B. Anstie's process for the preservation of sphygmographic tracings of the pulse—described in the January number of the *Practitioner*—though very ready in its application, is yet not quite so free from the appearance of complicatedness as to commend itself to the busy doctor—especially in the country, where observations must be taken in the patient's house, perhaps many miles from the necessary apparatus.

“Until this communication appeared, I was unaware that the following simple method was not generally known :—Attach to the glass slide a slip of glazed paper (supplied by Messrs. Weiss) by folding one end round the extremity that fits into the brass groove, and by embracing the other in the grasp of the Dieffenbach forceps; smoke the paper by means of the flame of a ‘tallow dip’ candle. Having obtained the tracing in the usual way, scratch on its margin any notes (such as name, date, &c.) that may be necessary. Pour over its surface, before the slip is unmounted, a little French photographic varnish, which can be obtained from any good photographer; and allow the surplus fluid to drain back into the bottle. In a few minutes the varnish is dry, and the tracing is ready for the note-book.”

[Our correspondent has not quite perceived the whole merits of the process proposed by Mr. Anstie. There is no object in varnishing the slide *at once*, as it is easy to carry a little box, with a rack like those for holding microscopic slides, which will hold, if necessary, six glasses, more than sufficient for one day's work. When brought home, the glass slide can be made the source of *several* permanent tracings, by Mr. Anstie's process.—ED. PRACT.]

Bibliography.¹

Die balneotherapeutische Bedeutung der Frühlingsseuren in einigen chronischen Krankheiten. Von Dr. Fleckles. 2te neuarbeit. Aufl. Leipzig: Fleischer.

Ueber Zucker und Harnstoffsausscheidung bei Diabetes unter dem Einflusse von Morphinum, kohlensaurem u. schwefelsaurem Natron. Von Dr. Kratschmer. Wien: Geroldsohn.

Die Kuhpockenimpfung. Von Dr. H. Rahn. Saugerhausen: Niemann.

Die Stickstoffoxydul Gas als Anæstheticum. Von Dr. C. Grohewald. Berlin: Guttman.

Dysenterie, rothe Ruhr: ihr Wesen u. Behandlung. Von Dr. F. Schneider. Leipzig: Schneider.

[Our list of French books, having been accidentally mislaid, will be published next month.]

¹ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.; Williams & Norgate, of Henrietta Street, Covent Garden, W.C.; or Baillière, of King William Street, Charing Cross.

Department of Public Health.

THE MEDICAL OFFICER OF HEALTH.—HIS PRESCRIBED DUTIES.¹

THE numerous Medical Officers of Health who are now being rapidly created throughout the country are in a pitiable case. The regulations promulgated by the Local Government Board as to the duties of the office where the Government becomes part paymaster, will inevitably become the rule of guidance also where the Sanitary Authority will accept no aid from the national purse. The state of things which will thus be brought about, if existing arrangements are to be maintained, will much resemble the sartorial device of pauper schools, where, with that sublime indifference to the fitness of things which too commonly characterises Poor-law administration, the children, irrespective of differences in height and bulk, are incongruously clad in suits of uniform cut and dimensions; a world too large for the little ones, ridiculously small for the big ones. And so it will be with Medical Officers of Health in respect to the official regulations for their guidance. These are absurdly insufficient for the "seven-leagued boot" districts, as the *Lancet* has aptly

¹ Orders of the Local Government Board as to the Duties, &c., of Medical Officers of Health, any portion of whose salary is paid out of moneys voted by Parliament.—(11th November, 1872.)

A Manual of Practical Hygiene, prepared especially for use in the Medical Service of the Army. By Edmund A. Parkes, M.D., F.R.S., Professor of Military Hygiene in the Army Medical School. 3rd edition. Churchill, 1869. 8vo. pp. 640.

A Handbook of Hygiene. By George Wilson, M.A., M.D. Edin., Medical Officer, H.M. Convict Prison, Portsmouth. Churchill, 1873. Sm. 8vo. pp. 380.

The Law relating to Public Health and Local Government. By W. Cunningham Glen. 6th edition.

termed such districts as that of the Brackley combination, with an area of 900 square miles and a population of near upon a quarter of a million; preposterously redundant for districts such as those which have been commonly formed in Wales—ordinary Poor-law medical officers' districts, to wit. The regulations in themselves, it is true, are based upon a conception of the Medical Officer of Health such as it is to be desired that he should be, and such as an abundant experience has shown that it is quite possible that he might be. But it would seem to be the fate of the Local Government Board to mar all that it touches in the active initiation of the Public Health Act. The limits as to area, population, and houses within which the duties set forth by the regulations could be rightly exercised, and beyond which their exercise would be impracticable, might have been ascertained without difficulty; and armed with this knowledge the general inspectors of the Board could have intelligently advised sanitary authorities on the subject. But it is obvious from the results that such knowledge cannot have been sought by the Board, and that other considerations than those of the efficient performance of the Medical Officer of Health's duties have regulated the advice tendered by the general inspectors of the Board to sanitary authorities. What those considerations may have been it is no part of our purpose to consider, but they have led to one of the most important intentions of the Legislature being frustrated in detail, and the appointment of Medical Officers of Health over a large area of the kingdom being reduced to a mere sham.

Either the regulations should have been prepared with special reference to the requirements of large districts and of small districts respectively, or they should have been accompanied by such detailed instructions as to their bearing as would have enabled sanitary authorities and Medical Officers of Health to ascertain for themselves the fitting application to districts whatever their area and population. Under any circumstances the regulations would have proved misleading without such detailed instructions; but under existing circumstances they form an additional element of confusion in the almost universal anarchy to which the sanitary organization of the kingdom under the Public Health Act 1872 has been reduced by the

Local Government Board. The regulations, however, have largely the force of law and must be accepted, and it behoves Medical Officers of Health who are subjected to their operation to master their requirements. These are of four classes, viz. :—

1. Those which may be designated *general*, and which refer (a) to the conditions which underlie and are productive of disease ; and (b) to the application of this knowledge to the preservation of health. These requirements imply, indeed, that the Medical Officer of Health must possess a competent knowledge of hygiene, both public and private.

2. Those which may be designated *statutory*, and which refer to the different duties of certifying and advising which the Medical Officer of Health is called upon to perform by the Sanitary Acts.

3. Those which may be designated *administrative*, and which refer to the mode of carrying out his duties.

4. Those which may be designated *clerical*, and which refer to the records he has to keep and the reports he has to make.

It is particularly with reference to the second and fourth categories of requirements that the insufficiency of the regulations is marked. The statutory duties of the Medical Officer of Health are those in which his responsibility will be brought most home to him, and a summary of these duties ought certainly to have formed a part of, or accompanied as an instructional minute, the regulations. The clerical duties, in so far as they relate to returns and tabular statements, should not have been left to the unguided imaginations of Medical Officers of Health and sanitary authorities. A foremost duty of the Local Government Board ought to have been to secure some uniformity in the returns of sickness, deaths, and proceedings in the different health-districts ; and this was only to be effected by the Board requiring or suggesting that certain forms should be used. This has not been done, and a most mischievous laxity and imperfection of returns is growing up for want of the guidance indicated. The Board requires that a quarterly return of the sickness and deaths of each subsidised district shall be prepared on forms to be provided by the Board and transmitted to it, but even these forms have not yet been issued. The Board further requires that a copy of each annual and any special report of a Medical Officer

of Health of a subsidised district shall also be transmitted to it, and it will be the first to suffer from the shortcomings of its requirements in respect to returns and reporting.

The Royal Sanitary Commission contemplated that the information to be required by the Central Authority from medical officers of health would yield, when subjected to analysis, results of the greatest advantage to the public weal; and it is to be surmised, from the regulations under consideration, that in requiring certain returns and reports to be forwarded to it, the Local Government Board had some such object in view, in addition to the supervision of the administrative work of districts. How deeply the importance of the Central Authority obtaining the fullest information of the state of sickness in the country is impressed upon the minds of leading sanitary reformers, is curiously shown by a provision in the Bill to amend the Laws relating to Public Health, introduced by Sir Charles Adderley, now under the consideration of Parliament and not opposed by the Government. Section 13 of this Bill enacts that "The Local Government Board may, from time to time, require from all Medical Officers of Health, and from all Medical Officers appointed under the laws for the relief of the poor, such reports of particulars respecting sickness within their respective districts as the Local Government Board may think fit. It shall be the duty of all Medical Officers of Health within their districts, and under the directions of the Local Government Board, to make returns as to sickness under treatment in or in connection with any institutions within their respective districts, established for the treatment of the sick, and maintained wholly or partly by voluntary subscriptions; or by endowments, or grants from the Consolidated Fund, or by local rates; and the trustees, governors, managers, and officers of any such institution shall furnish to such Medical Officers of Health all reasonable and needful assistance in the preparation of such returns." That is to say, that Medical Officers of Health, irrespective of their arrangements with their particular sanitary authorities, shall, without fee or reward, be liable at any moment to be called upon to give, in the interest of the State, undefined labours of brain and pen! That, in other words, the Local Government Board shall have the power at its will to impose upon Medical

Officers of Health another and most onerous duty in addition to those which they had contracted to perform! That this preposterous and impracticable provision, sinning alike against common sense and common justice, should have found its way into an otherwise well-considered Bill, is a curious illustration of the point of view in which the medical man appears to be regarded by certain leading sanitary reformers, namely, as a necessary evil in health-matters, to be tolerated and used, but not else to be considered. This is the lingering result of that unhappy state of things in the profession which had its apotheosis in the Medical Council—a body which now sits upon its shoulders like the Old Man of the Sea. But it is not with this aspect of the section quoted that we have to deal. We have cited it simply as a further example of the desire existing among sanitary reformers, and, it may be said, probably entertained also by the Local Government Board, of utilising the work of local medical officers of health for the general public good. Now, from this point of view, the defects in the regulations under consideration, which we have dwelt upon, are fatal to such object, and the Local Government Board, emulating the ingenious carpenter in Hogarth's well-known print, is to be observed ingeniously sawing asunder the beam on which it rests at a point between itself and the point of support.

We propose in subsequent numbers to discuss briefly the duties of Medical Officers of Health as set forth in the Regulations of the Local Government Board.

THE PERIOD OF INFECTION IN EPIDEMIC DISEASE.¹

AN important and suggestive paper, on the period of infection in epidemic disease, read before the Epidemiological Society by Dr. William Squire, throws considerable light upon one of the most obscure questions in medicine. It is based chiefly upon personal observation, and opens out a field of research which deserves to be much more fully cultivated than it has yet been. Commencing with the proposition that in contagious maladies the infection begins as soon as the disease begins, and lasts for a variable time after it is over, the inquiry proceeds to elucidate the intricacies of the initiatory phenomena of the more ordinary epidemic disorders, with the view of guarding against infection in the earlier stages of some of them, and to bring together facts illustrative of the persistence of infection in others. The paper thus falls naturally into two parts—the first occupied with general views on the incubation of disease; the second with details of the time occupied in the development and propagation of many of the more ordinary forms. This latter part will not take up so much of our space as the former, for its value consists in embodying exact data of the intervals of infection in measles for upwards of forty cases, with similar facts for a good number of cases of mumps and chicken-pox, besides some suggestive examples in whooping-cough, scarlet fever, and typhoid, sufficient to show how much has still to be done for these diseases. In measles it is not too much to say that the record here given by Dr. Squire is as valuable for comparison and reference as that given for typhus by Dr. Murchison in the St. Thomas's Hospital Reports for January of this year.

¹ Proceedings of the Epidemiological Society, 1872-3.

A reason for entering at length into the incubation period of epidemic disease is that some diseases, such as measles and hooping-cough, are propagated almost as certainly while in this preliminary stage as when fully developed, and that both these complaints are often insidiously introduced into homes where it would be specially desirable to prevent their entrance, by want of attention to this fact; so that the author is at some pains to enforce the axiom that "diseases may be infectious before they are developed," and that the key to this apparent paradox is in the study of the incubation period. The two separate stages of latency and of invasion, into which the incubation period is divided, give the one the time necessary for the ordinary precautions of quarantine, the other the time at which infection begins. The latter is the so-called "sickening" for the approaching malady, characterised by fever, sometimes by a predominance of the general symptoms over the local; so that though the nature of the special disease may at this time be doubtful, the degree and duration of the fever, as ascertained by the thermometer, aid towards an earlier certainty than could be afforded by the local symptoms alone.

The rapidity with which the poison of disease can become operative varies both as to the form of poison and as to the mode by which it finds ingress: thus, small-pox by inoculation requires nine days to produce its effects; by inhalation, fourteen. The whole of this time cannot be assigned to the period of latency, as in the last three or four days of the interval some of the initial stages of the disease are being accomplished. The same thing is observable in measles, which, developed in seven days after inoculation, requires ten or twelve days to appear after infection. The latent period varies with the mode by which the poison is introduced. There is no such variation after the diseased action has begun, for the phenomena of the last five days, however the poison may have been received, are identical, and of the last four sufficiently obvious to be popularly recognised. These days are shown to be infectious, as far as measles is concerned, by conclusive evidence.

It may be affirmed therefore of some diseases, that they cannot show themselves except after a certain interval, the stages of invasion occupying a definite time; that if to this there be

added, as often there must be, an uncertain interval of latency, then consequently the "incubation period" of these diseases must be a long one. On the other hand, where the different processes that constitute the disease are gone through with extreme rapidity, such diseases can be classed together as having a short period of incubation. Small-pox, vaccinia, measles, rubeola, mumps, varicella, and typhoid fever represent diseases having a long incubation period; typhus and relapsing fever forming the connecting link with the class having a short incubation period, which includes relapsing fever, scarlet fever, diphtheria, plague, cholera, diarrhœa, influenza, erysipelas, and, lastly, hooping-cough, the connecting link of this group with the former, for it combines some of the leading features of both classes.

This classification of epidemic diseases is adopted with advantage in treating of their periods of infection. A long incubation period is followed by a definite illness, terminating in a crisis, with sequelæ neither very constant nor of long duration; a short incubation period gives rise to a sudden morbid disturbance, that may have either a long or a short process, very liable to relapses, and to prolonged and definite sequelæ, with infection persisting far on into convalescence. It follows that infection is spread most at the end of the diseases of the latter class, generally from impatience of their lingering effects; in the former class, as already stated, the earliest period is often a source of danger from disregard of the premonitory symptoms. Severe as is the morbid process often met with in this group, and great as the amount of infection must be while at its height (for the amount of infecting poison must always be directly as the amount of the disease present), yet when the diseased action is over and the past evidence of disease cleared away, as after the falling away of the crusts in small-pox, infection would seem to cease more quickly and completely than in many less terrible maladies. So also in typhoid fever, where the morbid process is more definite and prolonged than in typhus, infection ceases soon after, if not as soon as, convalescence is established; while typhus is most virulently contagious after more than a week of very complete convalescence. Hooping-cough is associated with the first group more because of the

frequency with which it is communicated in its early stages, than from any valid claim it may have to be considered long in its incubation period. The stage of invasion is often considerably prolonged, but it matters little whether we consider this as really part of the disease without the hoop so long as we recognise it as an infectious part of it. The remarkable association of whooping-cough with measles gives it a claim to some notice here; statistics on a large scale show that it is so associated, and partial observation very generally remarks the connection. There is also a close parallelism in their natural history, so that sometimes a doubt may remain whether in a particular instance the two diseases contracted at the same time have been running their course together, the whooping-cough at first marked by the more prominent phenomena of the eruptive disease; or whether some of the pulmonary complications of measles would account for certain persistent symptoms common to both. Of these two explanations, the former is supported by several cases of mixed measles and whooping-cough, as well as by the analogy found in one or two cases where whooping-cough was complicated with varicella and vaccinia; while the latter would imply that the one disease might be only a phase or further development of the other. This would appear to be less likely than that after one disease has run its course there should remain a special liability or susceptibility to suffer from the other. Regarded by the light of the instances adduced, measles and whooping-cough may be taken as the two members of totally distinct groups or circles that approximate the nearest to each other, but are individually as separate and distinguishable as are measles and mumps.

When the infection of both measles and mumps is received at the same time, the measles makes its appearance first, and the mumps shows itself about ten days after the measles has subsided. In this conjuncture, as in that of measles and whooping-cough, the ordinary incubation period of measles is prolonged; and that of varicella, judging from one of the cases, would seem to be prolonged also. Whooping-cough taken with measles is seldom fully declared in less than three weeks after the eruptive disorder, the one disease interrupting the other; the more nearly allied diseases, measles and mumps, can run part of their

course together, for, allowing for some mutual retardation, the time at which the mumps follows the measles is very nearly the same as is often occupied in the development of mumps when no eruption of measles has intervened.

The period of incubation in twenty-five cases of mumps was from 14 to 18 days in fifteen of the cases ; of the remaining ten cases, six occupied from 18 to 20 days, three 21 days, and one 22 days ; so that for a preventive quarantine, when the poison of mumps has to be guarded against, fully three weeks must be allowed. It is noticeable in these cases, as in those of measles, that a short limited exposure to infection does not serve to fix the shortest period of incubation, but has been followed by a longer interval of freedom from all signs of disease than when the exposure has been more continuous. When measles and mumps have been received at the same time, measles, having the shorter incubation, shows itself first. To those susceptible of taking both infections, who are in contact only until the eruptive stage of the first is over, measles only is communicated. It is possible when measles and whooping-cough are combined, for measles only to be communicated to others susceptible of both. When a child insusceptible of either, from having previously gone through one complaint, takes the other, that alone is communicated to children who have previously had neither ; thus, by a process of clinical analysis, these different diseases, in whatever degree they may be related to each other, are shown to be essentially distinct. The true alliance of the epidemic and contagious roseola or rubeola is with measles, from which it is sufficiently distinct, and certainly is not merely a spurious or second attack of true measles morbillis.

The concurrence of scarlet fever with measles has been very rarely observed. Even where they have prevailed simultaneously in the same establishment, the susceptible have taken the one or the other with very little modification of type. In one case a girl was thought to have slight symptoms of scarlet fever, and was removed from a school where a servant had measles. This girl soon lost her sore-throat, but fell ill with measles in the following week. Some of the girls who remained at the school were ill with scarlet fever at the same time. They of course were isolated till they could be safely removed, and

did not take measles, one of them having measles in a very characteristic manner a year afterwards.

The incubation period of scarlet fever is a short one, so that a week or eight days may be all that is requisite for quarantine purposes; and early separation often suffices to prevent its spread; but the length of time infection may linger is shown to be a much longer one than is generally supposed. Two cases are given where personal infection persisted for sixty-six and seventy days respectively. It would seem, however, that infection may be received, and either lie dormant for a limited time till some shock starts it into activity, or that its effects are intercepted at an early stage, as in a case extracted from a clinical lecture of Sir James Paget's, where scarlet fever, just appearing after lithotomy in a boy, was delayed for nearly a month, till the wound had healed; and three weeks after scarlet fever hooping-cough made its appearance. A similar prolongation of the incubation of typhoid is given, where some premonitory diarrhoea, already existing a week, ceased while the patient was under an operation for fistula. Three weeks afterwards, as soon as the wound had healed, a rigor occurred, followed by high fever and diarrhoea, characteristic of typhoid, which then ran its usual course.

The old maxim of "two diseases not co-existing" still retains much of its force. In the concurrence of two diseases we see an inhibiting power on the part of the predominant malady; the diseased processes already established interrupting or retarding others that are imminent, thus vitiating to a certain extent our calculations as to the period or duration of infection.

Another possible source of infection, sometimes overlooked, is in the second or modified attacks of many of these diseases. Modified small-pox, in its mildest form, is known to be capable of conveying the disease to others who may be susceptible of its worst effects. Persons who are said to have had scarlet fever and hooping-cough at some previous time, are not safe from the liability of giving the disease to others by means of personal infection from slight sore-throat or merely tickling cough, as well as by conveyance in their clothes or by neglect of personal cleanliness. The length of time that infection may cling to chambers, surfaces, and clothes, is well known.

One deduction of the greatest practical importance is drawn from observing how constantly even the most diffusible infections, such as scarlet fever and hooping-cough, spread to those nearest together, whether occupying the same bed, the same class, or the same room, if that be a small one; and how greatly the fatality is augmented where there is either overcrowding, or where after a death from one of those diseases, delay occurs in effecting the requisite separation. Our deduction is this: that even though the spread of these diseases cannot be arrested by the most careful watchfulness, the injury they inflict upon the community or the individual might be reduced to a degree that is almost inconceivable, if, to the ordinary improvements in drainage and water supply of the district, we could have sufficient sleeping accommodation and breathing-space in the habitations of the family.

GERMAN OPINION ON THE ETIOLOGY OF ENTERIC FEVER.

WHILE English students have been investigating the spread of enteric fever, with results that have left no doubt on their minds as to the habitual dissemination of the disease by means of its specific discharges, and when they seem to have reached the point at which further inquiry must go on to seek what the specific element is and how it originates, they have been at times a little puzzled at the small amount of help that comes to them from their German fellow-workers. The literature of this subject in Germany has for some time been contributed disproportionately by Professor v. Pettenkofer and his disputants.

Recently a number of communications have been addressed to the Medical Society of Munich, embracing the experiences of many physicians on the etiology of enteric fever: and these, as abstracted in the *Berlin Quarterly Review of Forensic Medicine*, appear to show that Von Pettenkofer's theory has not received general acquiescence; that some regard it as having but a small and intermediate significance, that others are disposed to ignore it altogether, and that the preponderance of medical opinion is more than might have been expected in the direction of the conclusions indicated by English research. Von Pettenkofer's views on the relation between the mortality from enteric fever and the fluctuations of soil-water are represented by himself and Dr. Buhl, adducing the now famous statistical evidence respecting the coincidence of the two in Munich. Their critics ask whether the two things, typhoid prevalence and falling soil-water, are not coincidences in the sense of being common consequences of some third condition as their common cause. Dr. Redner, admitting the coincidence, maintains that the lowering of

soil-water is only so far dangerous as the soil thereby becomes to a greater depth and in a wider area impregnated with excremental impurities. This contributor regards faecal impurity of air as the essential condition needed for the epidemic spread of enteric fever. His proposed explanation of the Munich statistics is even more applicable to the case, quite as common in our English experience, of this fever spreading through drinking water. Respecting the means of communication of the Munich fever, it seems not to have been solely with enteric fever that the several observers had to deal. The nomenclature of the observed disease is, as usual, confused (some using the word "typhus" throughout in naming the disease that others at the same time and place call "Abdominal typhus," or by names of similar meaning), but there are several indications that true typhus formed some part of their experiences. Ranke finds one epidemic much more contagious than another; and Von Gietl has some distinct and even differential propositions about the disease to which we in England now restrict the name typhus. Where it is essentially enteric fever that is in question, there is no great uniformity of opinion about the means of its communication. Wolfsteiner regards it both as contagious and as transmissible by means of infected drinking-water. Ranke finds it spread through emanations from a filthy soil, or through drinking water contaminated by putrid matter. Redner, as before said, assigns its epidemic extension chiefly to privy emanations. The balance of opinion appears to incline to regard the disease as capable of originating, under conditions of faecal filth, in the individual, without a former case.

So far as the observers saw the same disease under different conditions, they doubtless found one rather than another means of extension at hand, and their differences are only on comparatively mere points of detail; the operation of excremental filth in the distribution of the disease being pretty universally agreed on, except by the advocates of occult soil conditions, transportable miasmata, and the like.

THE ETIOLOGY OF TYPHUS.¹

A MEMOIR by Dr. Amédée Maurin, crowned both by the Institute and the Academy of Medicine, records the facts of the terrible outbreak of typhus in 1868, as they were observed in the Civil Hospital at Algiers. The record is of painful interest, and it supplies, among other things, an additional illustration of the development of typhus under conditions in which the persons apparently exciting the disease were not themselves in the first instance the victims of it.

In 1868 the whole of North-western Africa, including Morocco, Algeria, Tunis, and Tripoli, underwent the misery of famine. The year 1865 was a year of extreme drought. In many places the seed sown never germinated from the extreme dryness. In 1866 there was a plague of locusts, and over large tracts of country the crops were entirely destroyed. The crops of 1867 did not replace the stores exhausted by the previous plagues of drought and locusts; and, to crown the history, murrain broke out among the cattle. In the winter of 1867-68, the indigenous populations were driven to the extremity of privation, and public charity had to step in to endeavour to stave off actual starvation among them. In Algeria the tribes quitted their encampments and flocked to the great towns, and, assembled there, presented pictures of horror rivalling the saddest phases of the Irish famine of 1847. They had exhausted the soil of all edible roots, and in some instances, maddened by hunger, had had recourse to cannibalism. This was the state of things at the beginning of 1868, when, according to Dr. Maurin, this happened in the ancient military prison which exists in

¹ Typhus des Arabes (*Épidémie de 1868*). Par le Dr. Amédée Maurin, Chirurgien à l'Hôpital Civil d'Alger. Paris, 1872.

the Rue Salluste, Algiers. This prison had been converted into a house of refuge for the starving Arabs brought in from the environs of the city. These unfortunates were covered with rags and vermin, in an incredible state of wasting and anæmia, and they gave off a peculiar overpowering odour ("une odeur *sui generis* repoussante"), but they were free from typhus. All at once, in five or six houses adjoining the prison, very grave cases of typhus appeared. Among these cases, the following is cited :—A young baker, twenty-two years of age, convalescent from typhoid fever, and at his first going out, passed among a group of mendicant Arabs waiting for the distribution of food. He arrested his steps a few moments to observe them. Three days after he was seized with typhus complicated with nasal hæmorrhage, confluent petechiæ, and intense delirium and other nervous disturbances, in the midst of which he succumbed after a few days' illness. The numerous facts which indicated that the starving but uninfected Arabs were the original source of the outbreak of typhus in Algiers, Dr. Maurin states, induced the municipal authorities to close the prison in the Rue Salluste as a refuge, and form one outside the fortifications.

It is to be regretted that Dr. Maurin should not have given in greater detail the evidence upon which the excitation of the typhus by the exhalations from the starving and filthy Arabs depended. It is to be regretted also that he has not included in his memoir some details of the prevalence of typhus in 1868 in the province, and that he makes no reference to relapsing fever. For, according to Dr. Jules Arnould ("Origines et Affinités du Typhus d'après l'Épidémie Algérienne de 1868"), relapsing fever was present in Constantine in the winter of 1866.

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